

MacWEEK

03.29.93 Volume 7 Number 13 THE NEWSWEEKLY FOR MACINTOSH MANAGERS

Now Up-to-Date 2.0

Better net capabilities in premier calendar app

MapInfo 2.0

Upgrade makes desktop mapping program a leader

Kurta XGT/ADB

Digitizing tablet has lots of features but lacks sensitivity

See Page 49

In Reviews

HP readies RISC-based color inkjet; Apple sets low-cost Fantasia for fall

New DeskJet offers PostScript Level 2

By Matthew Rothenberg

Cupertino, Calif. — New output devices from Hewlett-Packard Co. and Apple will raise the tone of color inkjet printing for Mac users, according to sources.

HP DeskJet 1200C/PS

Ship date: May

List price: \$2,399

Resolution: 600 by 300 dpi, monochrome; 300 by 300 dpi, CMYK

Print speeds: 4 to 6 ppm, monochrome; 1 to 2 minutes per page, CMYK

Languages: Adobe PostScript Level 2, color PCL 5, HP-GL/2

Interfaces: LocalTalk, Centronics parallel standard; IOBASE T, token ring optional

Processor: 11-MHz i960SA RISC chip

► HP in May will unveil and ship the DeskJet 1200C/PS, a \$2,399 RISC-based inkjet printer that features Adobe PostScript Level 2 and a maximum resolution of 600 by 300 dpi.

The device reportedly uses new higher-quality inks and print cartridges to print black text or 24-bit-color graphics to letter-, legal- and A4-size plain or coated paper as well as transparencies. It offers three print modes; output speeds range from 4 pages per minute to 7 ppm for text and from 1 to 2 minutes per page for color images.

The DeskJet 1200C/PS will come with 35 Type 1 and 10 TrueType fonts as well as Adobe Type Manager, sources said. It switches automatically among Level 2, color PCL 5 and HP-GL/2 and includes a font-card slot. The printer will ship standard with LocalTalk and Centronics parallel interfaces as well as an MIO slot for HP's new JetDirect interface cards (see story, Page 115).

See Printers, Page 115

FileWave agents cross Atlantic

By Andrew Gore

Antwerp, Belgium — Wave Research Ltd., a start-up company partially funded by Apple, this week is expected to ship FileWave, a set of Finder-integrated software agents that transparently manage files on both desktop and mobile Macs.

The product, which works with both System 6 and 7 clients, is designed to automate software distribution, version synchronization and usage monitoring networkwide.

FileWave's Administrator Agent lets system managers create user groups and assign them sets of applications and data files by clicking and dragging objects in Finder

windows, as in System 7's Users & Groups control panel.

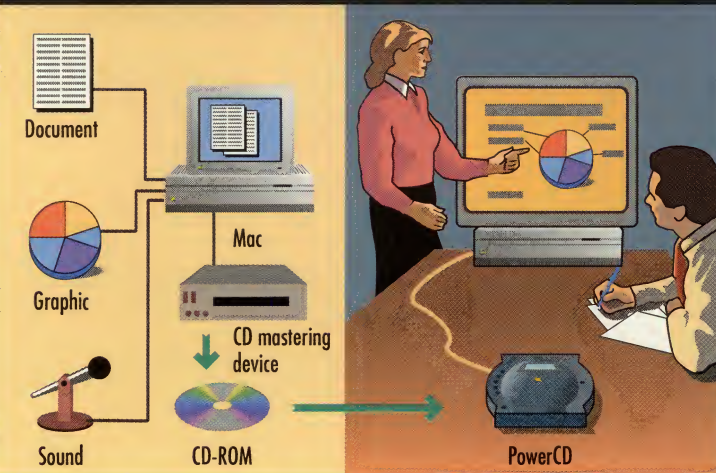
The files, which are stored in a back-end database, are then copied in the background to each user's local hard disk, although they appear on the user desktop as part of a separate, password-protected virtual volume.

When the administrator changes a file set — updating a report or adding a new application, for example — the system transparently makes the corresponding changes on the designated users' desktops.

► **Groups and sets.** The system is intended to make it easy for administrators to deliver the right

See FileWave, Page 115

Apple's master plan for CD-ROM



Multiformat CD player first piece of Apple PIE

PowerCD sets table for mastering unit

By Matthew Rothenberg and Neil McManus

Hanover, Germany — Apple's PIE division bore its first fruit last week when the company unveiled PowerCD, a portable device that plays CD-ROM, Photo CD and audio compact discs.

To complement the new device, Apple reportedly is working on a desktop CD authoring system that will let users create their own discs containing multimedia business presentations.

► **PowerCD.** Apple debuted

PowerCD, due this summer, at CeBIT '93 here. The 3.1-pound device, which can run off AC power or four C batteries, will cost less than \$500, sources said.

"With PowerCD, Apple is making a bridge between the business market and the home market," said Denise Caruso, editor of San Francisco-based Digital Media: A Seybold Report. "Business users can take it along as a presentation player box, and home users can use it to play Photo CDs and music CDs."

PowerCD will come with a SCSI interface and cable to connect to the Mac and an audio-video cable to connect to television sets.

It features an average data-access

See PowerCD, Page 115

ESD, PIE emerge on global stage with CeBIT rollouts

By Andrew Gore

Hanover, Germany — Just weeks after staging its first worldwide product launch on foreign soil, Apple last week went to the opposite side of the planet for another international introduction.

While last month's Tokyo rollout featured mainstream Macs and printers, Apple's announcements here at CeBIT '93, the world's largest computer trade show, put the company's new Enterprise Systems and Personal Interactive Electronics divisions in the spotlight.

At the top of Apple's agenda was the formal debut of ESD's Apple Workgroup Servers and Apple-Search text-retrieval software (see MacWEEK, March 22) and PIE's portable CD player (see story, left).

But a flurry of Newton-related disclosures, focusing on Apple's efforts to convince other developers to adopt its personal digital assistant (PDA) technology, all but upstaged the product introductions.

The company announced that it has licensed the Newton operating system to Motorola Inc., Kyushu Matsushita Electric Co. Ltd. and Siemens Private Communications Systems Group. According to Gaston Bastiaens, general manager of PIE, the agreements are intended to keep PDAs out of the mire of incompatible standards that have held multimedia back.

See CeBIT, Page 116

SkyLab liftoff now slated for June

By Lisa Picarille

San Jose, Calif. — Radius Inc. is counting down for the June launch of SkyLab, a "media server" for pre-press and multimedia users.

Set to be unveiled at Digital World in June and to ship by the end of the summer, SkyLab is a Radius-designed box that incorporates Mac ROM code licensed from Apple and Radius' 68040 Rocket accelerators.

Radius and Apple officials met two weeks ago to discuss the possi-

bility of Apple selling SkyLab, according to sources.

The server, which has a 68030 processor on the motherboard, has two bays with six slots each. The 12 NuBus 90 slots can support a variety of cards, including Rockets, networking and video boards.

A fully loaded SkyLab can deliver up to 300 mips of processing power and support up to 20 Gbytes of storage, sources said. A base configura-

See SkyLab, Page 115

NEWSPAPER SECOND CLASS

Special Report

Scripting today and tomorrow

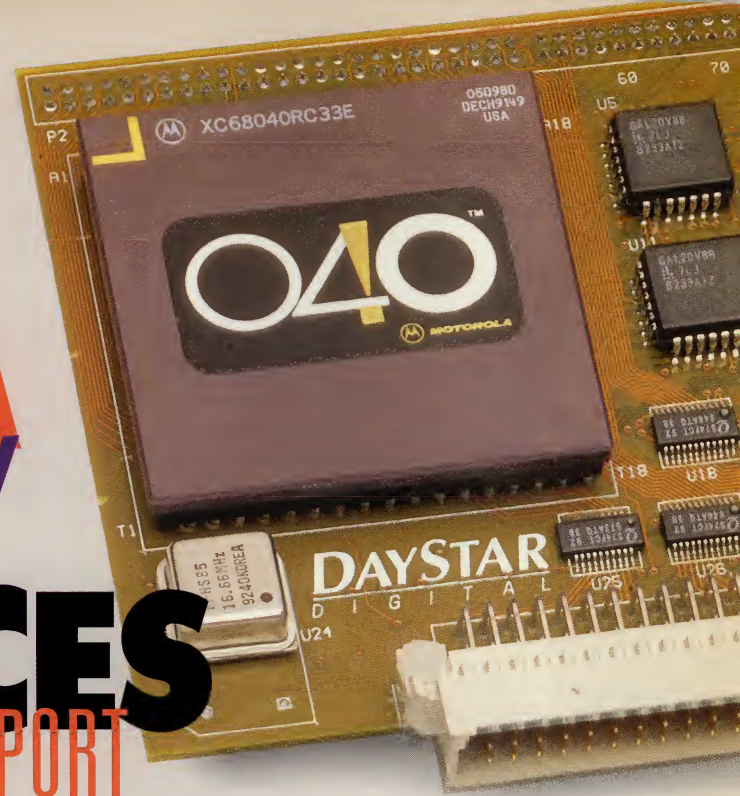


How business users put scripts to work

See Page 40

POWER Acceleration performance LOWER PRICES the need for speed

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Suggested Retail Price
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The Mac client for Notes, due next month as part of Version 3.0, offers the same functionality as the current OS/2 and Windows clients, according to Lotus.

Mac Notes client to ship next month with Version 3

Lotus adds new tools for administration

By Leonard Heymann

New York — Mac users can finally start taking Notes next month.

Lotus Development Corp. last week said Version 3.0 of Notes, replete with a long-awaited Mac client and a host of enhancements for users, developers and administrators, will ship within 30 days. Priced at \$495 per client and \$495 per server, Notes combines multi-user databases and electronic mail to provide a platform for workgroup applications.

The system is popular among sites with large networks of IBM PCs and compatibles because it automatically replicates data between site or departmental servers, linking users with E-mail and other workgroup functions.

Lotus officials, who made the announcement at a news conference here, vowed the Mac client will offer functionality equal to that of the OS/2 and Windows clients.

The Mac version supports a few Mac-specific System 7 features, including publish and subscribe, but just the required Apple events. The program will run under both System 6 and 7. Although Notes requires a minimum of 2.5 Mbytes of RAM, Lotus recommends at least 5 Mbytes.

The Mac client communicates with Notes servers running on OS/2 via AppleTalk. But John Bartlett, Lotus Mac Notes product manager, said the company may also support Novell's forthcoming MacIPX, which would let Macs communicate via Novell's IPX (Internetwork Packet Exchange) protocol.

One Mac Notes beta user said he believes a key factor in the success of Lotus' cross-platform strategy will be the number of Mac application developers supporting OLE (Object Linking and Embedding), the inter-application communications protocol developed by Microsoft Corp. of Redmond, Wash.

Notes' implementation of OLE, called Seamless Objects, allows developers to embed in forms documents and objects from other applications that support OLE and launch the original application when the form is accessed. Although the standard is widely used under Windows 3.1, only Microsoft's own applications and a few related products support it on the Mac so far.

"A great deal of responsibility [for the success of Notes on PCs] relies on [documents] we embed in Notes documents," said beta-tester Lou Clark, a systems technologist at chemicals maker Monsanto Co. in St. Louis. "Lotus will have a hard time covering that over."

Clark, who has been working with Lotus on the Mac Notes client for more than a year, has deployed beta software on about 60 of the more than 1,000 Macs his group supports. "People have been screaming" for Mac support for Notes, he said. "We're going to feel very good when we can start putting Notes on every desktop."

Clark urged Mac managers not to "be scared off by the requirement of running an OS/2 machine in your shop to take advantage of the Notes technology."

Lotus also unveiled a Windows-based Notes server aimed at small workgroups. The company said this year it will ship versions for Windows NT, a 32-bit version for OS/2 and an NLM (NetWare Loadable Module) for Novell Inc.'s NetWare.

New systems-management tools let administrators remotely manage a Notes Server, chart performance and receive alarms.

CompuServe also announced that it will join the Notes bandwagon by initially offering a private service for Notes users, developers and resellers, and later developing public services for Notes.

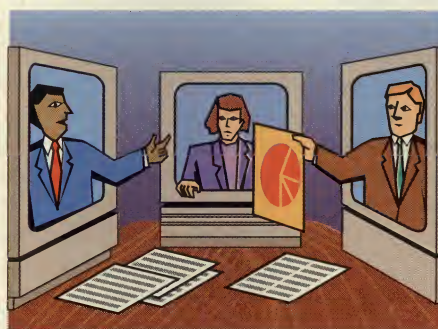
Lotus Development Corp. is at 55 Cambridge Parkway, Cambridge, Mass. 02142. Phone (617) 577-8500; fax (617) 693-4663. □

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Print Central tuned for Apple servers

Version 3.0 extends controls, queue limits

By Neil McManus

State College, Pa. — Compumation Inc. has greeted the Apple Workgroup Servers with a new version of its print management system that gives users graphical controls over print queues.

Print Central 3.0, available now for \$795, lets network administrators

set up 16 print queues, double the number of Version 2.0. Each queue can handle up to six output devices, including laser and thermal printers, imagesetters, and slide recorders.

The program's new interface lets users click on a queue's icon and drag connecting lines to targeted printers. The software sends the job to the first available printer on a queue.

A new bundled application called Remote Administrator lets managers intervene from any Mac on the network to reprioritize jobs,

place them on hold or redirect them to another queue.

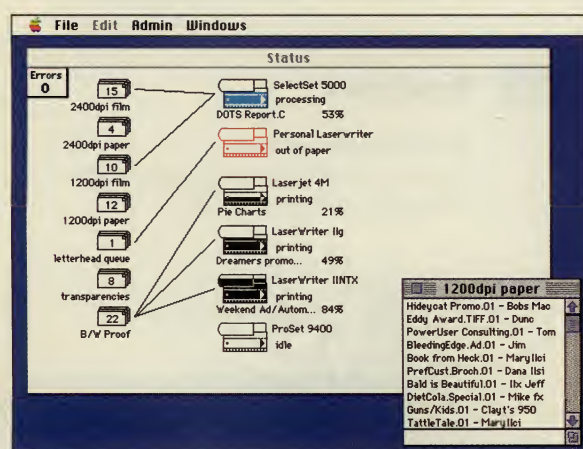
Remote Users, another bundled program, tells users where their job stands in a queue, when it has been printed and at which printer.

Print Central keeps a log of all jobs printed as well as their size, print time and who printed them. It can sort this information by attribute or export logs to spreadsheets or text editors.

Version 3.0 also works with Radius Inc.'s \$499 RocketShare system extension to divide large printing tasks among multiple Radius Rocket 68040-based accelerators.

Compumation said Print Central's throughput is 40 percent faster on an Apple Workgroup Server 95 than on a Quadra 950. Apple's new workgroup servers, like the current version of AppleShare, provide print spooling, but at the introduction of the new servers, Apple cited Print Central as an alternative for sites that need heavy-duty print services.

Compumation Inc. is at 820 N. University Drive, State College, Pa. 16803. Phone (814) 238-2120; fax (814) 238-2246. □



Compumation's Print Central 3.0 lets users click on a queue's icon and drag connecting lines to targeted printers.

Light Source polishes Ofoto for retail sales

By Matthew Rothenberg

Larkspur, Calif. — Light Source Computer Images Inc. last week recast Ofoto 2.0 as a retail package and released an interim upgrade to the 24-bit-color scan-optimization program.

Ofoto 2.0.1, available now for \$395, fixes several bugs in the previous version, which made its debut bundled with Apple's \$1,349 Color OneScanner at January's Macworld Expo.

Version 2.0.1 adds support for scanners from Hewlett-Packard Co., Microtek Inc., Epson America Inc., La Cie Ltd., Agfa and UMAX Technologies Inc.

The update eliminates some bugs and corrects the program's monitor calibration controls, which were off by about 30 percent.

Upgrades are free to users who received Ofoto 2.0 with the Color OneScanner. Retail buyers of the \$195 gray-scale version of Ofoto can get Version 2.0.1 for \$95; those who received the gray-scale software with the monochrome OneScanner can upgrade for \$75.

Light Source is at 17 E. Sir Francis Drake Blvd., Suite 100, Larkspur, Calif. 94939. Phone (415) 461-8000; fax (415) 461-8011. □

Olduvai raises bar on Icon-It!; util builds more colorful tool bars

By Henry Norr

Miami — Users who have come to appreciate the benefits of the Toolbar in recent versions of Microsoft Word and Excel can now put similar icon bars in any application with the latest release of Olduvai Corp.'s Icon-It! utility.

Icon-It! Pro 3.0 is a system extension that creates customizable bars with icons representing program functions; users can choose a command by clicking on the icon instead of pulling down a menu or typing a Command-key sequence.

New features in the latest release include an icon editor with painting tools, a library with hundreds of standard icons, a choice between

color and black-and-white buttons, and pop-up comments that explain each icon's function.

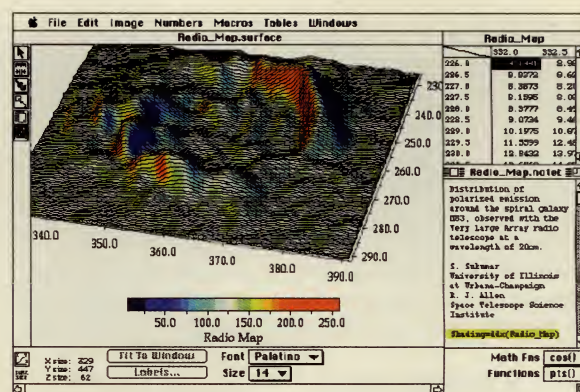
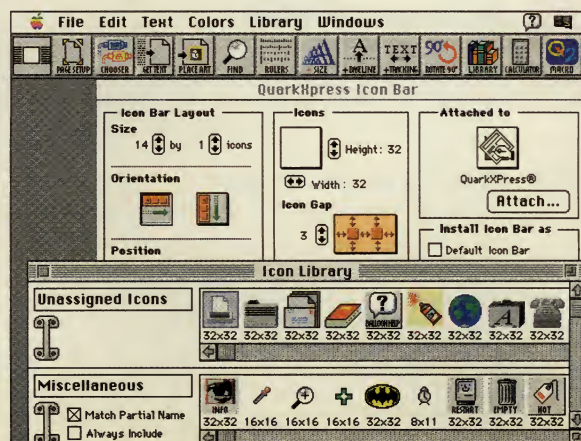
The program lets users define the size, design and spacing of buttons, and the number of rows in each icon bar.

Icon-It! Pro 3.0 lists for \$129, but through April 30 users can order it directly from Olduvai for \$79 plus \$8 shipping and handling.

Users of previous versions can upgrade for \$29 plus \$8 shipping and handling.

Olduvai Corp. is at Dadeland Towers, 9200 S. Dadeland Blvd., Suite 725, Miami, Fla. 33156. Phone (305) 670-1112; fax (305) 670-1992. □

A library of icons in various sizes and an array of layout options allow users of Olduvai's Icon-It! Pro 3.0 to design icon bars that suit their own habits and preferences.



Spyglass Transform 3.0 gives users more control over labeling the axes of graphs.

Spyglass Transform gets new focus; update uses Mathematica functions

By Raines Cohen

Savoy, Ill. — Spyglass Transform will get its own transformation this week when Spyglass Inc. ships Version 3.0 of the \$595 data-analysis and presentation tool.

New features include:

► **MathLink.** Users of Wolfram Research Inc.'s \$595 Mathematica can install a Package (external) supplied by Spyglass and then take advantage of Transform's functions and scripting language from within Mathematica. Conversely, Transform users can tap Mathematica's language, numeric calculation functions and PostScript-based graphics. The programs communicate using the MathLink multiplatform inter-application communications protocols developed by Wolfram.

► **Import.** Version 3.0 can read MatLab, GIF (Graphic Interchange Format), PBM and XWD files, in addition to the PICT, PICS, FITS, HDF and TIFF files supported by earlier versions.

► **Scripting.** The template functions in Transform 2.1 have evolved into a full scripting language in Version 3.0. The language helps users

automate repetitive tasks, such as importing data, manipulating arrays, creating plots, adding labels, and exporting images and data.

"I used it to analyze some recent astronomical data," said beta-tester Robert Brown, astronomer at the Space Telescope Science Institute at Johns Hopkins University in Baltimore. "The ability to write scripts that address whole folders of data at once is essential. We're taking thousands of exposures of pictures of nearby stars, looking for planets. I wouldn't know how to do it another way."

► **Annotation.** Transform 3.0 users can add floating-point annotations, titles, axis labels, numerical scales and tick marks to raster images; line graphs; color bars; and contour, surface and vector plots.

Version 1.0 and 2.0 users can upgrade for \$129; Version 2.1 users can upgrade for \$99, or free if they purchased Transform this year. Members of the Spyglass Automatic Update Plan, priced at \$69 a year for Transform, can also upgrade free.

Spyglass Inc. is at 1800 Woodfield Drive, Savoy, Ill. 61874. Phone (217) 355-6000; fax (217) 355-8925. □

Conley array passes Apple server test

By Henry Norr

Hanover, Germany — Conley Corp., a high-end storage-system vendor that is less than a year old, got a moment in the limelight here last week.

Morris Taradalsky, vice president and general manager of Apple's Enterprise Systems Division, showed Conley's SR1 disk array attached to an Apple Workgroup Server 95 during the official rollout of Apple's new server products. He used the Conley system, which allows "hot swapping" of failed drive mechanisms and power supplies, to demonstrate that the Apple servers are suitable to mission-critical applications.

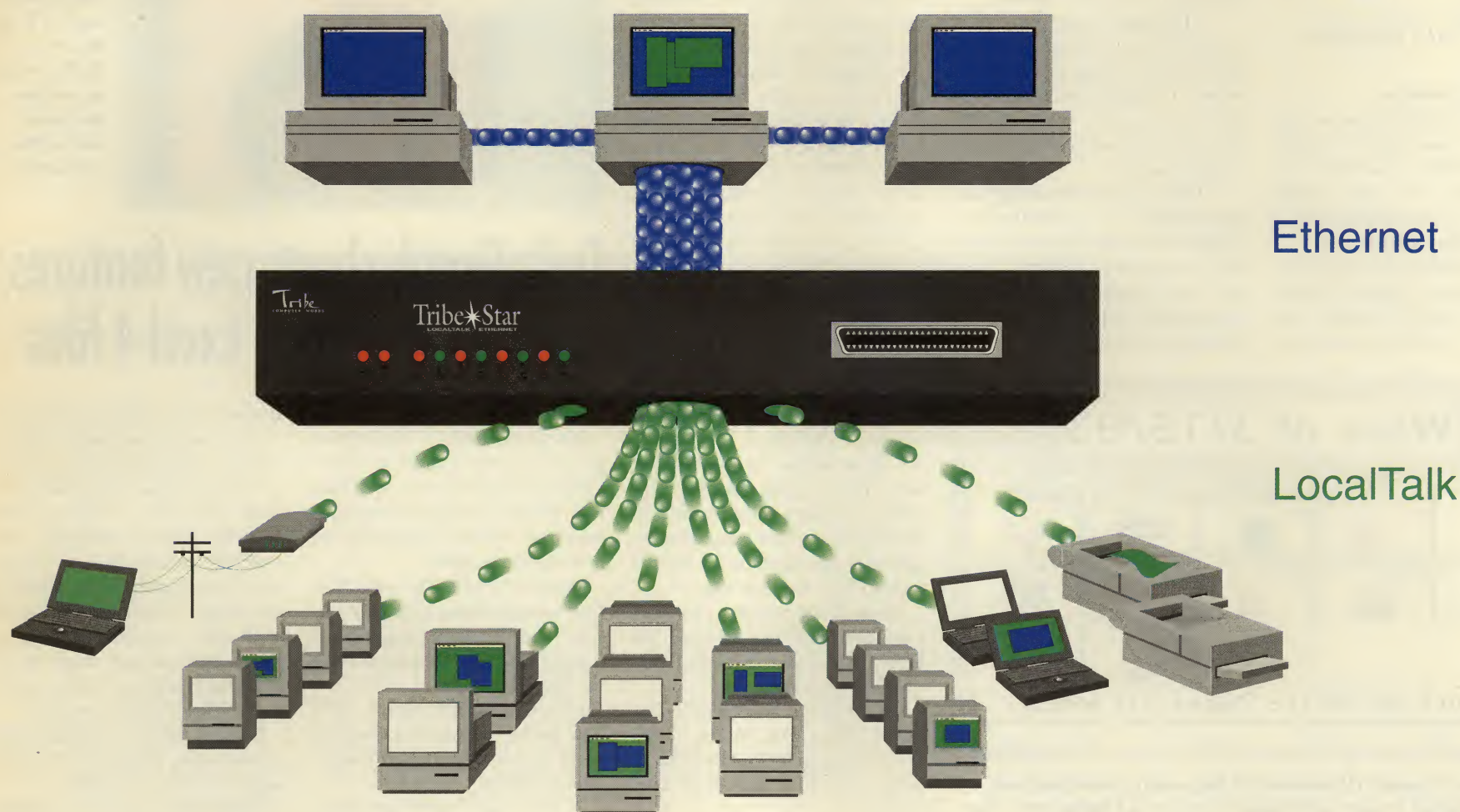
The SR1 can contain up to 10 3.5-inch drives or five 5.25-inch mechanisms. A base configuration

with three 1-Gbyte drives lists for \$16,995. On the AWS 95 it attaches directly to Apple's processor direct slot card; for the AWS 60 and 80 Conley offers its own Fast SCSI PDS card for \$995 (see MacWEEK, March 8).

The SR1 can be configured for RAID (redundant array of inexpensive disks) levels 0, 1, 3 or 5; multiple levels can coexist on the same device. Conley's configuration and management utilities now come in both A/UX and standard Mac versions. Options include remote monitoring and broadcast of problem alerts across a network.

Conley Corp. is at 16 W. 22nd St., 11th Floor, New York, N.Y. 10010. Phone (212) 741-9480; fax (212) 741-9296. □

The Smartest Way to Migrate From LocalTalk to Ethernet



Question: What is TribeStar?

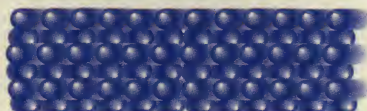
An AppleTalk network hub with eight LocalTalk ports and one Ethernet port. TribeStar™ can handle eight simultaneous full-speed connections between LocalTalk and Ethernet. A router or hub-router combination can only handle one at a time.

Question: What makes it so smart for Ethernet migration?

Because in one box you get both packet-switched LocalTalk and high-speed Ethernet connectivity. You can mix LocalTalk and Ethernet in the most sensible way—and get eight times the throughput of a router. How does it work? With a router, the packet stream between LocalTalk and Ethernet looks like this:



With five microprocessors and an 80 Mbps backplane, TribeStar builds a roadway between LocalTalk and Ethernet that is eight times wider:



TribeStar can process eight times more packets per second than a router.

TribeStar

LOCALTALK ETHERNET

Question: How much will TribeStar speed up my LocalTalk?

In a LocalTalk network of 15 to 30 users, it's not unusual to have eight people concurrently accessing Ethernet-based network services. In this case, TribeStar is about four times faster than a hub-router combination. (See graph.)

All Ethernet	12 sec.
TribeStar	22 sec.
Hub+router	85 sec.

Time to complete eight simultaneous downloads of a 200 KB file from a Macintosh IIx running AppleShare.

Question: Impressive. Where should I use TribeStar?

Use TribeStar whenever you want to integrate LocalTalk and Ethernet. And use it to give LocalTalk users fast access to network services. TribeStar requires virtually no configuration and comes with SwitchMonitor management software. The simplest, most powerful solution, it's a great way to get started with Ethernet.

Question: How much is it?

TribeStar lists for \$1795. Compare the alternatives:

TribeStar	\$1795
Hub+router	\$3290
All Ethernet	\$8840

Approximate cost for a 25-node network. All prices are list.

Question: Wow. Why should I ever buy a router or a StarController?

Hmmm. Can't think of any reasons.

Question: OK, must be about time for the phone number.

510-547-7800

Call us. We're happy to discuss your network situation. We'll also send further information, including a disk that demonstrates how TribeStar works.



Tribe
COMPUTER WORKS

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CE advances CalendarMaker to 4.0

Update adds layouts, colors, Find feature

By Kirsten L. Parkinson

West Des Moines, Iowa — Letting users create bigger, brighter and more-flexible calendars, CE Software Inc. last week shipped Version 4.0 of its schedule printing and designing application.

CalendarMaker 4.0, priced at \$59.95, adds new layouts, including daily, weekly, biweekly and year views, to the previous ver-

sion's month layout. Other new features of Version 4.0 include:

► **Multipage printing.** With CalendarMaker 4.0, users can create calendars as large as 113 by 113 inches. The program tiles calendars into separate pages, which users can then paste or tape together to make a single calendar.

► **Color and formatting enhancements.** The application now supports 256 colors, instead of the eight in previous versions. Users can assign colors and text styles to all calendar components, including headings and borders.

► **Find function.** Version 4.0 includes a Find feature, allowing users to search calendars for any text in a floating note or event.

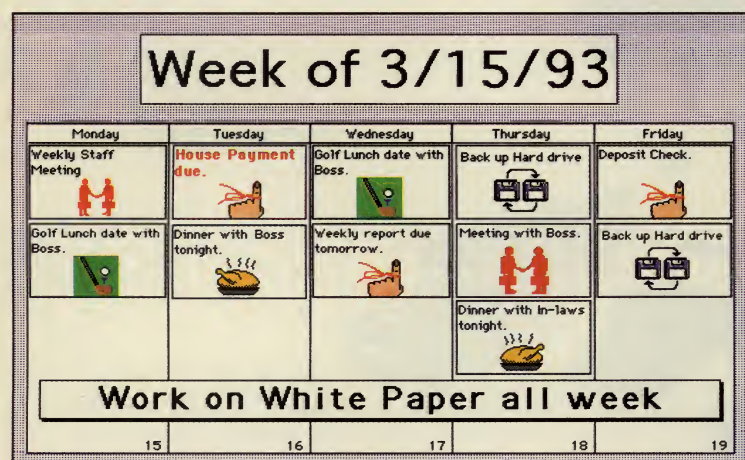
► **Improved headings.** Users can create calendar headings that include dates formatted either as words (March 29, 1993) or numbers (3/29/93), which can be edited in sections; previous versions supported only straight-text headers. The upgrade also supports headers in foreign languages that use multibyte character sets, such as kanji.

► **Recurring events.** CalendarMaker 4.0 allows users to create exceptions to recurring events, such as a weekly meeting rescheduled because of a holiday.

► **Icon editor.** In place of the Icon Mover utility bundled with previous versions, the program now incorporates an icon editor that lets users edit and import color icons as well as PICT and Paint files.

Users of any previous version of CalendarMaker can upgrade for \$25, or free if they purchased Version 3.0 this calendar year.

CE Software Inc. is at P.O. Box 65580, West Des Moines, Iowa 50265. Phone (515) 224-1995 or (800) 523-7638; fax (515) 224-4534. □



CalendarMaker 4.0 supports 256 colors and adds daily, weekly, biweekly and yearly views. Its Find feature lets users search calendars for any text in a floating note or event.

Ricoh rolls out magneto-optical direct to end users

By Kirsten L. Parkinson

San Jose, Calif. — Ricoh Corp.'s File Products Division will break into the Mac end-user market this week with the introduction of two magneto-optical drives.

Traditionally an OEM company, Ricoh will unveil both a 3.5-inch optical drive and a 5.25-inch optical

model for direct sale to end users.

The 3.5-inch Transporter Mac, which provides a capacity of 128 Mbytes per cartridge, will be available in a \$1,995 external model next month and a \$1,795 internal model for the Quadras, Centris 650 and Mac IIvx in May.

The 5.25-inch external Hyper-

Space Mac drive, with a capacity of 600 Mbytes per cartridge, will ship next month for \$3,995.

The Transporter Mac and HyperSpace Mac drives will ship with Insignia Solutions Inc.'s RapidTrak driver software and AccessPC, which allows the drives to read DOS-formatted cartridges.

With caching provided by RapidTrak, the Transporter Mac models will offer an "effective" access time of 12.4 milliseconds and an average effective data transfer rate of 1.6 Mbytes per second, according to Ricoh. The HyperSpace Mac drive will have an effective access time of 13.8 milliseconds and an average effective data transfer rate of 2 Mbytes per second with caching, the company said.

Users who purchase either drive before July 1 will receive one formatted cartridge with the drive. Additional formatted media will be \$74 for the 3.5-inch cartridge and \$240 for a 5.25-inch size.

Ricoh Corp.'s File Products Division is at 3001 Orchard Parkway, San Jose, Calif. 95134-2088. Phone (408) 432-8800 or (800) 955-3453; fax (408) 943-9364. □

Claris Clear Choice charges up Power To Go package for PBs

By Lisa Picarille

Santa Clara, Calif. — Claris Clear Choice last week shipped Power To Go, a collection of utilities for PowerBook security, power management, hot keys and travel.

Developed by ALSoft Inc. of Houston, the \$89 package made its debut in January as UP (Utilities for the PowerBook).

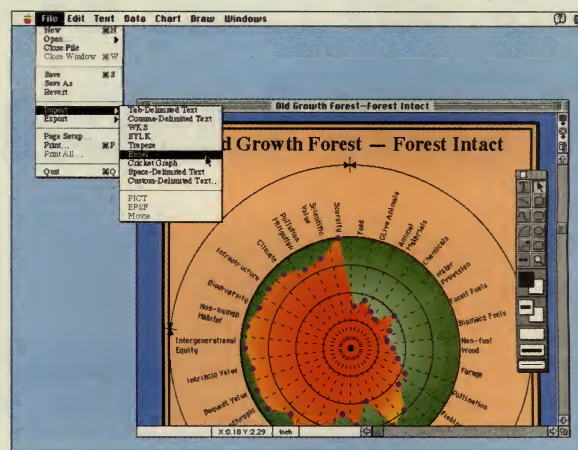
The program offers a single slide bar for users to select power-consumption levels. This setting then controls screen brightness, processor speed and sleep options.

The utility includes password pro-

tection, a selection of highly visible cursors, an automatic screen saver and a start-up shortcut for airport security checks. Optical "sticky menu" settings hold down menus until a selection is made, eliminating the need to simultaneously click and drag.

Power To Go is the second product under the CCC label. CCC, formed in November 1992, is a division of Claris Corp. that markets and distributes low-cost third-party software.

CCC is at 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, Calif. 95052-8168. Phone (408) 987-8227 or (800) 325-2747. □



DeltaGraph Professional for the Macintosh Version 2.0.3 now directly imports files from Microsoft Excel 4.0 for the Mac. Users of the Mac version can now open files created with the Windows version.

DeltaGraph charts new features; opens to Windows, Excel 4 files

By Lisa Picarille

Monterey, Calif. — DeltaPoint Inc. this month updated its DeltaGraph Professional for the Macintosh, which combines data-analysis tools with charting, graphing and presentation graphics.

Version 2.0.3 lets Mac users open files created in the Windows version. The Windows version could already read files generated from the Mac release.

DeltaGraph Professional 2.0.3 now directly imports files from the latest version of Microsoft Corp.'s Mac spreadsheet, Excel 4.0.

A new Pause/Stop/Redraw feature lets users pause screen redraws with a single mouse click to continue making formatting changes. Users

also have the option to completely suspend screen redrawing until a change is made that forces a redraw.

The new release of the \$295 program also adds a variety of new charting options, including the capability to clip data and switch axes when creating bubble charts. A new Rotate Boxes feature can be used with orientation setting to allow organizational charts to be reversed. In addition, users can now save and load custom curve fits.

Current users can upgrade free by contacting DeltaPoint technical support at (408) 375-4700.

DeltaPoint Inc. is at 2 Harris Court, Suite B-1, Monterey, Calif. 93940. Phone (408) 648-4000; fax (408) 648-4020. □

Philips masters Mac version of CD-ROM authoring system

By Kirsten L. Parkinson

Knoxville, Tenn. — Philips Consumer Electronics Co. this week will bring its desktop CD-authoring technology to the Macintosh market.

The \$8,995 CDD 521MR Desktop CD-recorder System, due to ship next month, will include the company's CD-ROM recorder and MacOnCD software.

The system will initially record discs in ISO 9660, hierarchical file system and CD-Audio formats. Philips plans to offer plug-in modules that add support for Compact Disc-Interactive and CD-ROM-XA formats. Price and release date have not been determined.

The authoring system will be able to record a single disc in 37 minutes, about half the time of existing recorders, and will support both single-session and multisession recording, the company said.

The recorder will offer an aver-

age access time of 1,000 milliseconds and a sustained data transfer rate of 352 Kbytes per second.

Blank discs for recording will be available from Philips for \$40 each.

Philips Consumer Electronics Co. is at 1 Philips Drive, P.O. Box 14810, Knoxville, Tenn. 37914. Phone (310) 217-1300 or (800) 835-3504; fax (310) 217-1883. □

For the record

The March 22 article on Microtek Lab Inc.'s ScanMaker 45t slide scanner included an incorrect price for Leaf Systems Inc.'s Leafscan 45. The Leafscan 45 costs \$17,000.

The March 22 issue reported an incorrect price for upgrades to QuickMail 2.6. Users of QuickMail 2.5 can upgrade to Version 2.6 for \$40 per site.

Mac technology aids disabled users

Conference features range of interfaces

By Reese Erlich

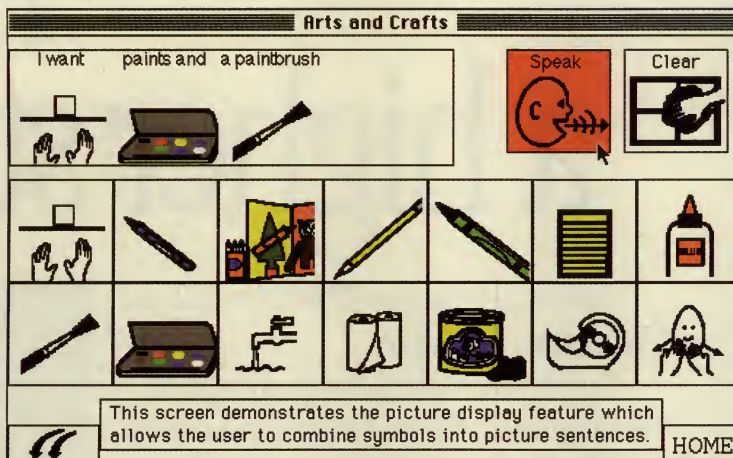
Los Angeles — An estimated 35 million Americans have disabilities and increasing numbers are using Macs, as last week's Technology and Persons with Disabilities Conference here demonstrated.

Susan Haase, who works in Stillwater, Okla., with an agency helping the disabled, said Apple's industrial design is one selling point for disabled people using Macs. As a result of childhood polio, she uses a wheelchair and has partial paralysis in her hands. "I don't have to bend my fingers to reach the PowerBook keys," she said. "The controls are well-positioned."

Dr. Alan Brightman, manager of Apple's Worldwide Disability Solutions Group, said the conference "shows how bubbling and sizzling [the technology] is in the real world. It's not just the same old issues every year."

Several vendors displayed new products for Mac users with disabilities, including:

► **Write:OutLoud**, a \$125 "talking word processor" released this month by Don Johnston Developmental Equipment Inc., allows visually impaired people to hear words as they type or edit text. It offers a talking spelling checker; high-



With Boardmaker and a Mac drawing program, users can build a display for nonspeakers to communicate by clicking on the appropriate symbol.

contrast text colors; and easy navigation tools to quickly review a document, select and speak text.

► **Kenx**, an interface that emulates the Mac keyboard and mouse, allows use of alternative input devices such as membrane boards and sip-and-puff switches. It was recently updated to Version 2.0 by Don Johnston. The \$780 Apple Desktop Bus device now accepts ASCII input over a serial connection. Upgrades are free.

► **Boardmaker**, which Mayer-Johnson Co. updated this month, is a \$399 database of 3,000 black-and-white pictures for use by people who cannot speak. The database can be expanded with imported color and black-and-white images. The new version works in 10 languages.

Users can select images from the

database and build a display in any Mac drawing program. Displays can be printed out and carried as a communications board or spoken by the Mac with a companion program, Speaking Dynamically.

► **Speaking Dynamically**, due in April for \$299 from Mayer-Johnson, is an authoring program with speech output. Selecting an on-screen button can make the Mac talk, type, play a recorded message, change screens or do several actions simultaneously.

Pictures are imported from Boardmaker to create communications displays. Other features include word processing, word prediction and abbreviation expansion. The program can be accessed by mouse input, touchscreen or a single switch.

► **MIKE (Mouse Interface and Keyboard Emulation)** software, which shipped this month from Prentke Romich Co., connects the Mac to the company's Liberator, a \$7,000 portable voice output communication aid.

With the \$195 MIKE software and a \$415 keyboard emulator, Liberator can be used as an input device to the Mac, replacing both the keyboard and mouse. Liberator has a light-touch key switch surface for people with limited upper limb mobility. It can also accept optical input from an infrared sensor that users wear on their head.

In addition, the software can transmit to the Mac for word processing all the vocabulary that users have stored in their Liberator for vocalization.

Don Johnston Developmental Equipment Inc. is at 1000 N. Rand Road, Building 115, Wauconda, Ill. 60084-0639. Phone (800) 999-4660; fax (708) 526-4177.

Mayer-Johnson Co. is at P.O. Box 1579, Solana Beach, Calif. 92075-1579. Phone (619) 481-2489; fax (619) 259-5726.

Prentke Romich Co. is at 1022 Heyl Road, Wooster, Ohio 44691. Phone (216) 262-1984 or (800) 262-1984; fax (216) 263-4829. □

Casa Blanca reformats Drive7 for new SyQuests, other media

By Robert Hess

Greenbrae, Calif. — Casa Blanca Works Inc. this month updated its Drive7 universal hard drive formatting application.

Version 2.3.4 of the \$79.95 utility adds support for SyQuest Technology Inc.'s SQ5110C, an 88-Mbyte mechanism that can write as well as read 44-Mbyte cartridges.

In addition, the new release contains a revised version of Drive7rem, a control panel that lets users mount and manage cartridges formatted with

software from a variety of vendors.

Casa Blanca Works said its control panel now complies with compatibility guidelines recently proposed by SyQuest Technology Inc. SyQuest is attempting to establish a standard for removable-media drivers based on SCSIProbe 3.5, a freeware mounting utility (see MacWEEK, Feb. 8).

Upgrades are \$10.

Casa Blanca Works Inc. is at 148 Bon Air Center, Greenbrae, Calif. 94904. Phone (415) 461-2227; fax (415) 461-2249. □

Aladdin fixes StuffIt Deluxe bugs

Watsonville, Calif. — Aladdin Systems Inc. this month updated StuffIt Deluxe, fixing some bugs and adding functions.

Version 3.0.5 of the \$120 file-compression utility can now more reliably execute scripts and decompress files stored in older-format archives, Aladdin said. The company also fixed bugs in the bundled SpaceSaver extension and in StuffIt Lite, a shareware version of StuffIt Deluxe.

Users can now rearrange the order

of encrypted items in an archive and create fixed-size, multisegment, self-extracting archives in one operation.

StuffIt's UnZip translator is now compatible with the ZIP 2.0 standard used on IBM PCs and compatibles.

Updaters for Version 3.0.1 or later are available free on-line or from Aladdin.

Aladdin Systems Inc. is at 165 Westridge Drive, Watsonville, Calif. 95076. Phone (408) 761-6200; fax (408) 761-6206. □

Lind ships new and updated chargers, adapters for PowerBooks and batteries

By Raines Cohen

Minneapolis — Lind Electronic Design Inc. this month updated its line of PowerBook power adapters and battery chargers and conditioners, and shipped an automotive adapter for the Duo.

► **Faster charger and conditioner.** The company shipped the SBC-1, a combination fast-charger and battery conditioner for PowerBook 1xx nickel-cadmium batteries. The \$89.95 SuperCharger fully charges batteries in two hours or less, compared with the five or more hours other chargers require; it can also deeply discharge batteries to eliminate the memory effect when a battery gets partially discharged and will not fully charge. An automotive-power cable adapter sells for \$10.95.

► **Rechargeable power pack.** A new 5-pound external box, the APP-2, can run a non-Duo PowerBook for about four times as long as the

internal battery, according to the company. The \$169.95 device includes cables allowing it to be charged either using Apple's standard PowerBook AC adapter or from an automotive cigarette lighter.

► **Duo auto adapter.** The \$99.95 PB-3 Automobile Power Adapter can recharge and power Mac Duos.

► **Double charger.** The BC2-100, which shipped this month for \$89.95, can charge two PowerBook 1xx batteries at once and simultaneously supply power to a PowerBook. The lightweight \$89.95 device draws power from Apple's AC adapter.

The company also reduced prices on its PowerBook 1xx auto adapters from \$99.95 to \$79.95.

Lind Electronic Design Inc. is at 6414 Cambridge St., Minneapolis, Minn. 55426. Phone (612) 927-6303 or (800) 659-5956; fax (612) 927-7740. □

SafeDeposit walks users through backups

By Robert Hess

Salt Lake City — Dayna Communications Inc. this week shipped its SafeDeposit automated backup system.

SafeDeposit backs up to and from any media that can be mounted on the desktop (see MacWEEK, Jan. 25). The application walks users through the process of setting up which files to back up, where to place the backups, when to perform backups and how to handle conflicts. Backups can be automated to run continuously, on command when volumes are mounted or at preset times.

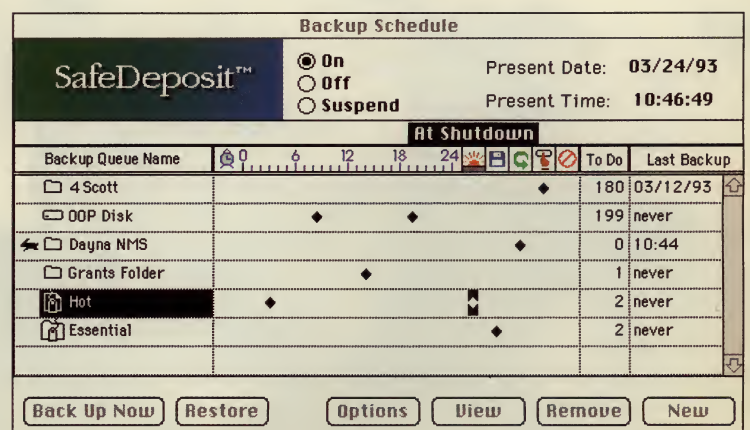
Files are backed up in Finder for-

mat so they can be recovered without SafeDeposit, or SafeDeposit can be used to automate the process.

For the next four months, SafeDeposit will sell for \$99; after that, the list price will be \$189. Multi-user licensing and a free expiring demo version are available.

SafeDeposit Server, an automated backup program for AppleShare servers, will ship next week, Dayna said. It will list at \$229 for four months, after which it will be \$449.

Dayna Communications Inc. is at 849 W. Levoe Drive, Salt Lake City, Utah 84123. Phone (801) 269-7394; fax (801) 269-7363. □



SafeDeposit backs up users' files in the background; backups can be automated to run continuously, on command when volumes are mounted or at preset times.

Apple and a higher standard

Introducing the LaserWriter® Pro 600 and 630 printers from Apple.

Never before have workgroup printers this affordable produced this level of output.

Offering you true 600-dot-per-inch resolution, they deliver more than four times



The LaserWriter Pro 600 and 630 feature PhotoGrade, an Apple breakthrough allowing you to print up to 91 levels of gray—that's 35% more grays than with our award-winning LaserWriter IIg.

A process that intelligently adjusts the size and position of every dot in relation to neighboring dots, allowing you to print up to 91 levels of gray at 300 dpi.

That's equivalent to a 1,000-dpi printer costing mountains more.

The result is noticeably sharper details and the ability to reproduce the subtle tones of gray in black-and-white photographs.

But even when you don't integrate photos into your documents, you'll still notice the difference. Because

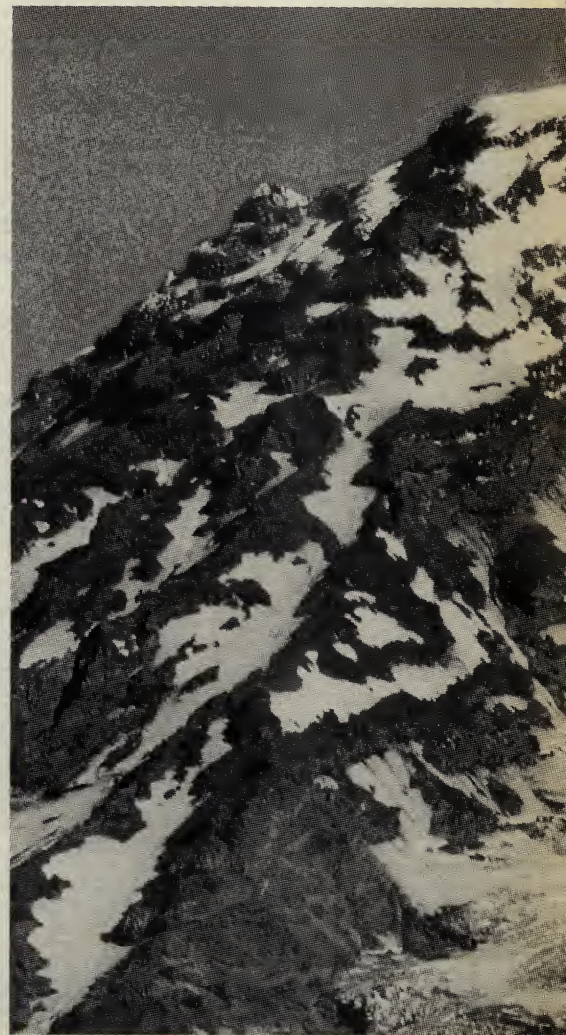


Both LaserWriter Pro models come with two paper trays and a host of paper-handling options, including a 500-sheet feeder and a 75-envelope feeder.

the definition of comparably priced 300-dpi printers.

Both models incorporate an Apple breakthrough in gray-scale printing called PhotoGrade.™

A process that intel-



Apple's FinePrint™ technology gives your text and line art cleaner edges and smoother curves. So your TrueType™ and PostScript™ Type One fonts have never had more impact.

Any way you look at it, your work looks better coming out of a LaserWriter Pro.

Two paper trays come standard, along with an array of options including a 500-sheet feeder and a 75-envelope feeder for a total paper-handling capacity of 850 sheets.



©1993 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LaserWriter, Macintosh and "The power to be your best" are registered trademarks, and FinePrint, PhotoGrade and TrueType are registered trademarks of Hewlett-Packard Company. Windows is a registered trademark of Microsoft Corp. *J.D. Power and Associates® 1992 Computer End User Satisfaction Study, Printers. Study conducted

nounces of laser printing.



You can also select and switch paper trays right from your computer and print a letter, complete with second sheet and envelope, without ever leaving your desk.

No other printer in the industry allows you to do so much so easily for so little.

For high-performance networks, the 630 features built-in Ethernet. So you'll be

able to move even the largest, most complicated image files and print them at speeds rivaling any RISC-based printer.

And if you happen to work in a mixed environment, both LaserWriter Pro models fit right in. They support PCL page description language and can easily accept jobs from Macintosh® and Windows-equipped computers simultaneously.

They also provide you with something that no other printer in the world can: Apple's renowned plug-and-play simplicity.

LaserWriter Pro 630 vs. HP LaserJet 4M

Price:	\$2,529*	\$2,999†
Gray levels:	91	51
Macintosh fonts:	64 TrueType	None
	35 PostScript	35 PostScript
PPM:	8	8
Ethernet:	Built in	Optional
RAM:	8MB	6MB

In fact, Apple® LaserWriter printers were recently ranked highest in Overall Laser Printer Customer Satisfaction by J.D. Power and Associates.* Outranking Hewlett-Packard.

To see why, visit your authorized Apple reseller for a full demonstration.

You'll find that the LaserWriter Pro has the power to elevate your work to a level ordinary printers can only aspire to.

The power not just to look your best. The power to be your best.®

The new LaserWriter Pro series from Apple.

Apple, Macintosh, and LaserWriter are trademarks of Apple Computer, Inc. Adobe, PostScript and the PostScript logo are trademarks of Adobe Systems Incorporated, which may be registered in certain jurisdictions. Hewlett-Packard, LaserJet and PCL are trademarks of Hewlett-Packard Company. *Based on a survey of 1,707 business end users at 848 business sites. †Manufacturer's suggested retail price. Actual output size 8 1/2" x 11". This ad was created using Macintosh personal computers and Apple LaserWriter printers.

BestBooks combines finance, accounting

Teleware app aimed at small businesses

By Jon Swartz

Rockaway, N.J. — Teleware Inc. this month shipped a bookkeeping software program for small businesses that combines personal finance and accounting features.

BestBooks provides small-business users with a simple nonaccounting program to automate their books, according to the company. The package, which shipped in a Microsoft Windows-compatible version earlier this year, borrows the graphical interface of Teleware's M.Y.O.B. accounting software.

The \$99 application features:

► **Data-entry helpers.** Every data-entry screen resembles its real-world counterpart. Checks, deposits, invoices and purchases can be memorized for recurring entry singly or in batches.

► **Customizable forms.** Users can work with the integrated drawing module to customize checks, invoices and mailing labels. Users can move and resize fields, import graphics such as company logos from other applications, and draw lines and boxes.

► **Invoicing.** The program features both item invoices for resellers and service invoices for professionals such as lawyers and accountants.

Original invoice detail can be recreated using the company's trace-back technology. Many elements are interlinked; for example, click-

ing on a customer's name displays the customer's profile. As a result, users can skip printing hard copies of individual invoices to save paper.

"Most [accounting] packages are either too complex or oversimplified," said beta-tester Bill Vick, owner of Vick & Associates, an executive-recruiting company based in Plano, Texas. "BestBooks

was easy to navigate around, and its ability to import from [Intuit Inc.'s] Quicken is particularly useful."

Teleware said it will offer an upgrade path from BestBooks to M.Y.O.B.

Teleware Inc. is at 300 Roundhill Drive, Rockaway, N.J. 07866. Phone (201) 586-2200 or (800) 322-6962; fax (201) 586-8885. □

FWB ships new 3.5-inch SyQuest, internal hard drives for Duo Docks

By Kirsten L. Parkinson

San Francisco — FWB Inc. last week rolled out five new storage devices, including a 3.5-inch SyQuest drive and internal drives for the Duo Dock.

► **New SyQuest.** The hammerDisk105, due next month for \$1,299, will offer a capacity of 105 Mbytes per cartridge. It will have an average seek time of 14.5 milliseconds and a sustained data transfer rate of 1.75 Mbytes per second.

The drive will ship with one cartridge and a copy of Hard Disk ToolKit, FWB's universal formatting and SCSI utility package, which lists separately for \$199.95. Additional cartridges will be \$125.

► **Duo Dock drives.** The company is now shipping four 3.5-inch internal drives that fit the Duo Docks.

Based on a Quantum mechanism, the \$779 hammer240is offers a capacity of 240 Mbytes and an average seek time of 14 milliseconds. When con-

nected to a SCSI-2 adapter, such as FWB's SCSI JackHammer, the drive supports burst-mode transfers at up to 10 Mbytes per second.

The Duo Dock drive is also available in 80-Mbyte, 120-Mbyte and 170-Mbyte models for \$399, \$529 and \$599, respectively. Also based on Quantum mechanisms, these three drives offer average seek times of 17 milliseconds and data transfer rates of up to 3 Mbytes per second.

The Duo Dock drives ship with Hard Disk ToolKit Version 1.3, an update released last month. FWB plans a further update next month to Version 1.3.1, which will be required for the hammerDisk105 and other vendors' implementations of the 3.5-inch SyQuest mechanism. Upgrades are \$10 or free with return of the original disk.

FWB Inc. is at 2040 Polk St., Suite 215, San Francisco, Calif. 94109. Phone (415) 474-8055; fax (415) 775-2125. □

MacPalette puts color printing in background

Microspot driver uses dither patterns

By Matthew Rothenberg

Cupertino, Calif. — ImageWriter II owners this month advanced to background printing of color images when Microspot USA Inc. shipped an update to its MacPalette II driver.

Like earlier versions, MacPalette II 2.3 costs \$69 and replaces Apple's ImageWriter II driver. Microspot's software uses dither patterns to image more than 250,000 colors with the standard four-color ribbon, compared with the Apple driver's eight-color limit. Besides background printing, Version 2.3 adds two spiral dither patterns, bringing the total number of patterns to four.

According to Microspot, its Chooser-level driver supports nearly

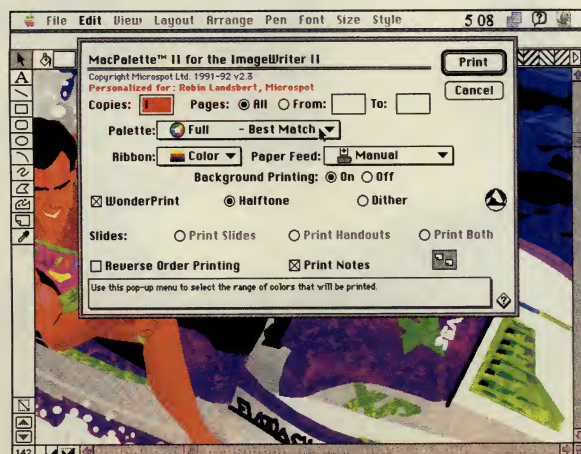
all applications; it runs only on Macs with Color QuickDraw in ROM. MacPalette II is compatible with Adobe Type Manager as well as TrueType fonts, the company said.

Current users can upgrade for \$15. Microspot also offers a \$249 AppleTalk version of the driver that lets multiple Macin-

toshes print to one ImageWriter II.

In addition, Microspot sells MacPlot pen plotter drivers, which let Mac applications print on a number of different plotters.

Microspot USA Inc. is at 20421 Stevens Creek Blvd., Suite 240, Cupertino, Calif. 95014. Phone (408) 253-2000; fax (408) 253-2055. □



Version 2.3 of Microspot's MacPalette II driver lets ImageWriter II users print color images in the background.



FROM THE Bookshelf

This week we focus on books about the latest versions of the word processors from Microsoft Corp. and Claris Corp.: Microsoft Word 5.1 and MacWrite Pro.



Word 5.1 Companion

By the Cobb Group

This officially sanctioned guide to Microsoft Word 5.0 and 5.1 covers the basics of working with the program and offers extended discussion of the new features. A section covers

the use of Apple's QuickTime to enliven documents.

\$29.95 / 687 pages / ISBN 1-55615-544-1

Microsoft Press, a division of Microsoft Corp.

1 Microsoft Way / Redmond, Wash. 98052-6399

Phone (206) 882-8080 or (800) 677-7377 / Fax (615) 793-3915

Word 5.1 for the Mac at Your Fingertips

By David Krassner

This updated edition of a guide to the word processing program includes essays on tricks and examples. The book details new features of Version 5.1 and includes SnapGuides, which are brief essays on user topics.

\$9.95 / 275 pages / ISBN 0-7821-1230-7

Sybox Inc.

2021 Challenger Drive / Alameda, Calif. 94501

Phone (510) 523-8233 / Fax (510) 523-2373

Microsoft Word 5.1 for the Macintosh Made Easy

By Paul Hoffman

Set up as a beginner's guide, this book gives specific instruction on the new features of Version 5.1. Numbered lessons are aided by examples and illustrations. Sections on style sheets and outlining offer tips to stay organized.

\$19.95 / 354 pages / ISBN 0-07-881949-0

Osborne McGraw-Hill, a division of McGraw-Hill Inc.

2600 10th St. / Berkeley, Calif. 94710

Phone (510) 549-6600 or (800) 227-0900 / Fax (510) 549-6603

MacWrite Pro Inside & Out

By Steve Michel and Dale Coleman

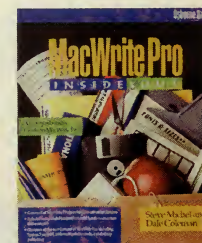
Written by two MacWEEK editors, this book includes exercises and step-by-step instructions for using all the features of the newest version of Claris' word processor. Sections cover tables and the desktop publishing features as well as System 7 support.

\$24.95 / 239 pages / ISBN 0-07-881864-8

Osborne McGraw-Hill, a division of McGraw-Hill Inc.

2600 10th St. / Berkeley, Calif. 94710

Phone (510) 549-6600 or (800) 227-0900 / Fax (510) 549-6603



Envisio kit to let users stack drives

By Ian G. Jacobs

St. Paul, Minn. — After shipping its SmartStack modular storage system this month, Envisio Inc. is preparing a kit that will allow do-it-yourselfers to add their own hard drives to the boxes.

The \$89 SmartKit, due next month,

includes all the components required to install a half-height or 1-inch-high hard disk drive into the \$249 SmartStack base unit, called a SmartSource (see MacWEEK, Jan. 4).

The SmartStack system allows users to add as many as seven drives while using only one power source and SCSI connector. All the

drives have individual SCSI IDs, but they transfer data through the stack's unique Pass-Through Bus connector. This lets users avoid the hassle of dealing with separate power cables and SCSI daisy chaining problems.

The SmartSource base also contains a 120-watt power supply, a fan and two 50-pin SCSI connectors.

The SmartKit includes an enclosure holding the drive, hardware for mounting the enclosure, and all the cables and internal connectors.

Hard disk drives from Seagate Technology Inc., Conner Peripherals Inc. and Quantum Corp. will all be supported, the company said. Envisio's technical-support staff will keep a list of other supported hard drives.

SmartKit users will also be able to add optical drives and digital audio tape systems.

Envisio Inc. is at 2640 Patton Road, St. Paul, Minn. 55113. Phone (612) 628-6288; fax (612) 633-1083. □

Mass Micro drives down prices on storage line

By Kirsten L. Parkinson

Sunnyvale, Calif. — Mass Microsystems Inc. last week cut the prices on its standard hard drives, Fast SCSI-2 drives and removable-media drives by up to 24 percent.

The company's DiamondDrives, with capacities ranging from 120 Mbytes to 1.8 Gbytes, dropped 4 percent to 18 percent. For example, the 1-Gbyte external DiamondDrive is now \$2,999, down from \$3,395.

Cuts to the high-capacity Fast SCSI-2 MASterDrives ranged from 3 percent to 13 percent. The 2.8-Gbyte external model dropped \$836, to \$7,359, while the 2.8-Gbyte internal drive fell \$746, to \$6,949.

In its DataPak line of removable-cartridge drives, Mass Microsystems reduced the price of its 44-Mbyte external SyQuest drive \$20, to \$749, while the 88-Mbyte DataPak 88c dropped to \$799, a \$100 cut.

The company's 128-Mbyte external optical drive is now \$1,499, down from \$1,799, while its internal model fell to \$1,419, a \$280 drop.

The HitchHiker line of external pocket-size drives saw cuts of 8 percent to 24 percent.

Mass Microsystems Inc. is at 810 W. Maude Ave., Sunnyvale, Calif. 94086. Phone (408) 522-1200; fax (408) 733-5499. □

Bear Rock delivers new sets of bar codes

By Ian G. Jacobs

Shingle Springs, Calif. — Bear Rock Technologies Corp. this month shipped an upgrade to its family of bar-code fonts and bundled the fonts with a label-design program.

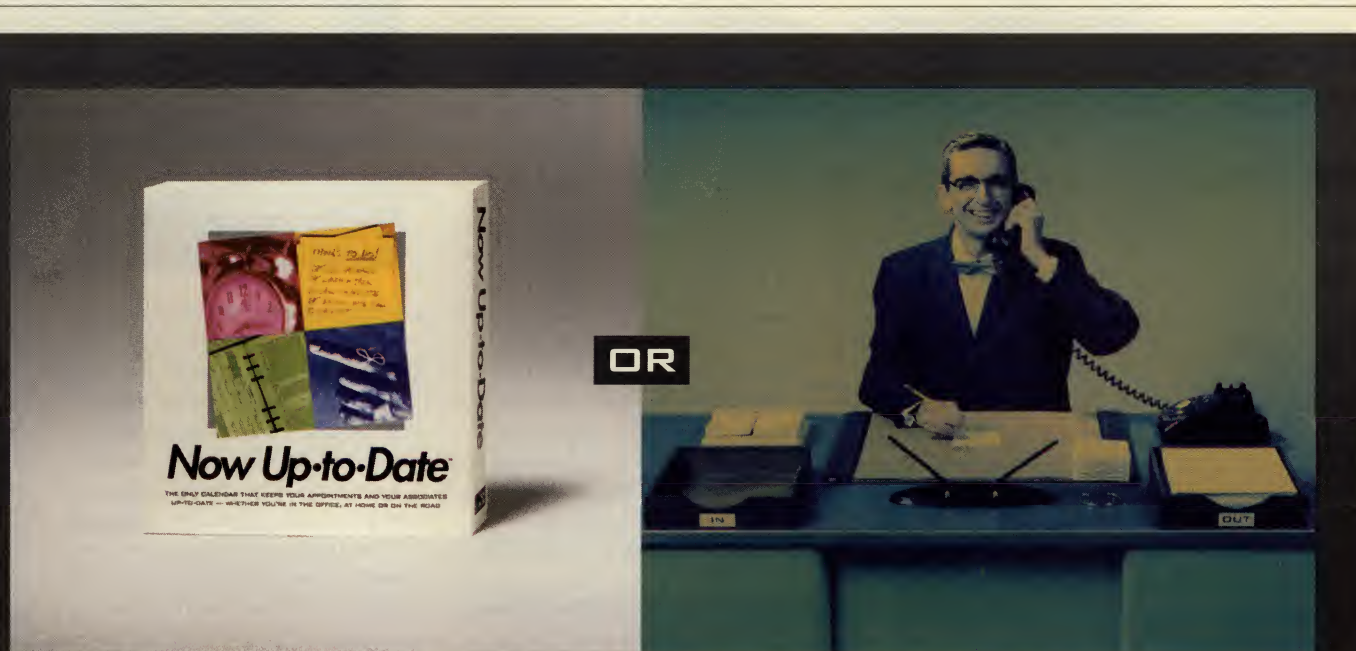
New volumes of PrintBar 4.0 create Postnet and Bookland EAN bar codes, as well as the Code 39, UPC, Interleaved 2 of 5 and FIM (Facing Identification Mark) codes already available.

All the fonts are supplied in PostScript Type 1 format; the Code 39 and Interleaved 2 of 5 fonts also are available in a bit-mapped version.

Each of the five \$225 volumes ships with Williams and Macias Inc.'s StickyBusiness Plus Special Edition, which contains more than 160 label templates. The label-making program sells separately for \$140.

Upgrades to Version 4.0 are \$45. Users who purchased in the past 90 days can upgrade free.

Bear Rock Technologies Corp. is at 4140 Mother Lode Drive, Suite 100, Shingle Springs, Calif. 95682. Phone (916) 672-0244 or (800) 232-7625; fax (916) 672-1103. □



**HOW TO BE NEAT,
PRECISE AND ORGANIZED.
WITHOUT BECOMING ONE OF THOSE
OBNOXIOUS PEOPLE WHO ARE NEAT,
PRECISE AND ORGANIZED.**

Step 1: Load Now Up-to-Date 2.0, the software that lets you schedule events, set reminders, manage To Do lists, print calendars and keep your associates informed, allowing you to become disgustingly organized.

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Management

Choosing hardware support means weighing trade-offs

Hardware
service
companies
offer many
options.
Selecting
one requires
balancing
cost vs.
equipment
redundancy.

By Larry Stevens

Hiring a company to provide hardware-support services may be one of the most complex purchasing decisions a manager will ever have to make. Virtually all companies that provide the service offer a large menu of choices, each of which has to be weighed to determine its cost-benefit ratio. However, most managers said the decision making becomes simpler when they pay close attention to their computer availability requirements.

Lee Rizio, vice president of information systems for Jenny Craig International Inc. in Del Mar, Calif., said the importance of the equipment — not cost — has to be the most significant factor. "We chose four-hour service [from ComputerLand Corp.], even though it was expensive, because when we analyzed our situation, we discovered we needed that kind of response," he said. "We had enough redundancy in our equipment so that people can jump on another system if a computer goes down. But we don't have as much redundancy in our LAN servers. We depend heavily on the network,

and we didn't want it to be out for more than half a day."

What vendors can offer.

ComputerLand, based in Concord, Calif.; JWP Inc. of Rye Brook, N.Y.; and Hewlett-Packard Co. of Palo Alto, Calif., for example, all offer either carry-in or on-site service on an annual contractual basis. The on-site service can have a guaranteed response time of four hours, eight hours, the next day or two-day service. And that time period can refer to business hours only, or 24 hours a day, 365 days a year. Another option is once-a-week service, in which a service team visits on the same day each week and solves any problems at that time.

Cost not the prime driver.

Obviously, the quicker the response, the more expensive the contract. But while price is certainly an issue, Al Andrus, senior vice president of service and support for ComputerLand, said: "Cost isn't the prime driver. The two main factors determining the level of service a company chooses are how much



JAMES ARONOVSKY

downtime it can afford and how much hardware redundancy it has."

Taia Ergueta, product marketing manager for open systems support at Hewlett-Packard, agreed. She said: "Those who opt for one-day service typically have no redundancy in critical areas of the enterprise. Those who sign up for once-a-week service have two of everything that's critical, such as network servers."

Toward the other side of the spectrum is a manufacturing company that opted for JWP's two-day response time. The company, which declined to be named, ties manufacturing and business processes — most running on VAXes — through a DECnet network. Sparing no expense, it hired

an in-house staff to respond to problems with the DEC machines.

However, the company's 25 Macs and 30 DOS machines are in the hands of sales, marketing, human resources and executives running standard off-the-shelf applications. The company's information systems manager said: "If one of those machines goes down, someone may be upset, but our business will go on. We can stand someone being a little upset for two days."

Keeping prices low. Besides accepting slower response time, service providers said there are other ways that companies may be able to keep prices low.

See Support, next page

Lee Rizio of Jenny Craig International chose a support service that offers a four-hour turnaround because equipment availability was of critical importance to him.

Software publishers' technical-support lines vs. third-party help desks

In a way, third-party help-desk services are to software publishers' technical-support lines what personal cars are to public transportation. The former are extremely convenient but expensive; the latter is cheaper or free but impersonal and offers spotty levels of service.

However, most users, even those who

opt to contract third-party help-desk providers, seem satisfied with the service offered by publishers' technical-support lines. After all, although the cost of providing technical support is buried in the price of the software, the service appears to be free. And in most cases, it is entirely adequate.

The main problem, some said, is that the quality of service isn't always level.

Dave Slifer, hot line support manager at Booz-Allen & Hamilton Inc. in McLean, Va., said: "Some publishers have excellent technical-support lines that are operated by people who know what they're doing and who pick up on the first few rings. But there are others that will take you a half-hour to get through, and the person you finally get doesn't fully understand the problem."

Despite this, Slifer believes that when Booz-Allen & Hamilton users are asked to call a publisher's technical-support line instead of the company's internal hot line, they are generally satisfied. But to even out the level of service users receive, the company is now considering signing up with a third-party help-desk service.

Greg Mefford, an editor at the Galveston (Texas) Daily News, said he has had good luck with his publishers' hot lines when asking questions specifically about the publisher's own products. But he hasn't fared as well when the question involved moving data from one package to another. "If you want to know how to export or import data to or from another program,"

he said, "the technician sometimes can help, or sometimes he just reads the names of the formats the software supports and sends me to the tech line of the other software company to see about exporting in that format. I could go back and forth two or three times before I get my question answered."

To solve this problem, Mefford recently signed up with ComputerLand Corp.'s Help Desk service, whose technicians are trained on all the packages Mefford uses.

Frances Hernandez, production assistant at the National Association of Purchasing Management Inc. in Tempe, Ariz., said the main advantage of using third-party help-desk services is that "I have one 800 number to call to get help on any of my packages." Hernandez, a relatively new Mac user who recently purchased seven software packages, said she didn't want to "keep track of a different number and speak to a different person for each package."

Finally, Mefford said there is an advantage to using a service where technicians are familiar with him and his Mac's configuration. "When I reach someone who knows my name and who is familiar with my setup, I don't have to spend time explaining what system and INITs I have installed," he said. — By Larry Stevens



ROB CRANDALL

Dave Slifer of Booz-Allen & Hamilton said he's fairly satisfied with software publishers' technical-support lines. But the company is considering using a third-party help desk.

Calendar of Events

APRIL

1-2: Wireless/PCS V, Washington, D.C. Wireless, voice and data technologies conference. Contact Telecommunications Reports at (202) 842-3022 or (800) 822-6338; fax (202) 842-3023.

2-4: National Apple User Group Symposium and Workshop '93, Ypsilanti, Mich. User group management and issues conference. Contact NAUGSAW '93 at (313) 482-0501; fax (313) 426-8481.

3: Northern California Mac Users Conference. Regional user-focused trade show. Contact Stanislaus Macintosh Computer Club at (209) 599-3082.

5-7: Apple Enterprise Computing Conference, San Francisco. Products and technologies to integrate client-server, mobile and workgroup computing into your network. Contact Apple at (415) 966-8978 or (800) 841-2322; fax (415) 966-8934.

12-14: Silicon Valley Networking Conference & Exposition, Santa Clara, Calif. Panel discussions, tutorials and exhibits focusing on network-management issues. Contact Sys-Tech Research at (408) 924-3930; fax (408) 997-8265.

12-15: FOSE '93, Washington, D.C. Federal Office Systems Exhibition. Contact National Trade Productions Inc. at (703) 683-8500 or (800) 638-8510; fax (703) 836-4486.

13-16: Seybold Boston '93, Boston. Seminar focusing on publishing technologies. Contact Seybold Seminars at (310) 457-8500 or (800) 433-5200; fax (310) 457-8510.

14-16: SIM Institutional Member Conference, Rancho Mirage, Calif. Information technology leadership and management issues discussed. Contact the Society for Information Management at (312) 644-6610; fax (312) 245-1081.

18-22: CDISC-4, Newport Beach, Calif. Fourth-annual Compact Disc-Interactive Software Conference. Contact Philips Interactive Media of America at (310) 444-6519; fax (310) 477-4953.

19-22: Object Expo, New York. National conference and exhibition on object-oriented technology. Contact SIGS Conferences at (212) 274-9135; fax (212) 274-0899.

21-23: Aldus Developers Conference, Seattle. For retail, hardware and software developers who want to make their products compatible with Aldus products or write Aldus Additions. Contact Aldus Corp. at (206) 343-4249; fax (206) 343-4240.

Please submit notices of conferences, trade shows and other Mac-related events to Calendar, MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105, or fax (415) 243-3650. No training or educational seminars please.

Support

From previous page

For example, Mike Turner, JWP director of services marketing, said that if a client company is willing to buy and store its own spare parts, he might be able to provide one-day service while billing the company for two-day service. This is because much of the extra cost of one-day vs. two-day service results from JWP's expenses for stocking parts.

Besides varying levels of service, support

companies offer a number of billing options. The standard policy charges an annual fixed fee for all services performed, but other options include actual cost of time and materials and a fixed price per each incident.

While the billing options vary in the way customers pay for the service, they are all based on the same statistical figure: the average failure rate of the installed equipment. Accordingly, any company whose hardware fails at a rate close to average — obviously the

vast majority — will find its annual bill the same no matter which billing option it selects.

However, Andrus said, those few companies that have a much lower-than-average failure rate on their machines may be able to gain a cost advantage by opting for an alternative billing plan. "If a company uses its printers only four hours a week, it may opt for a per-occurrence option in order not to pay the same annual amount as the average company that uses its printers, say, 25 hours a week," he said. □

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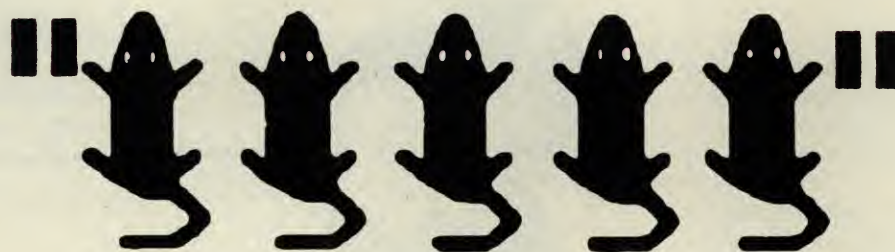
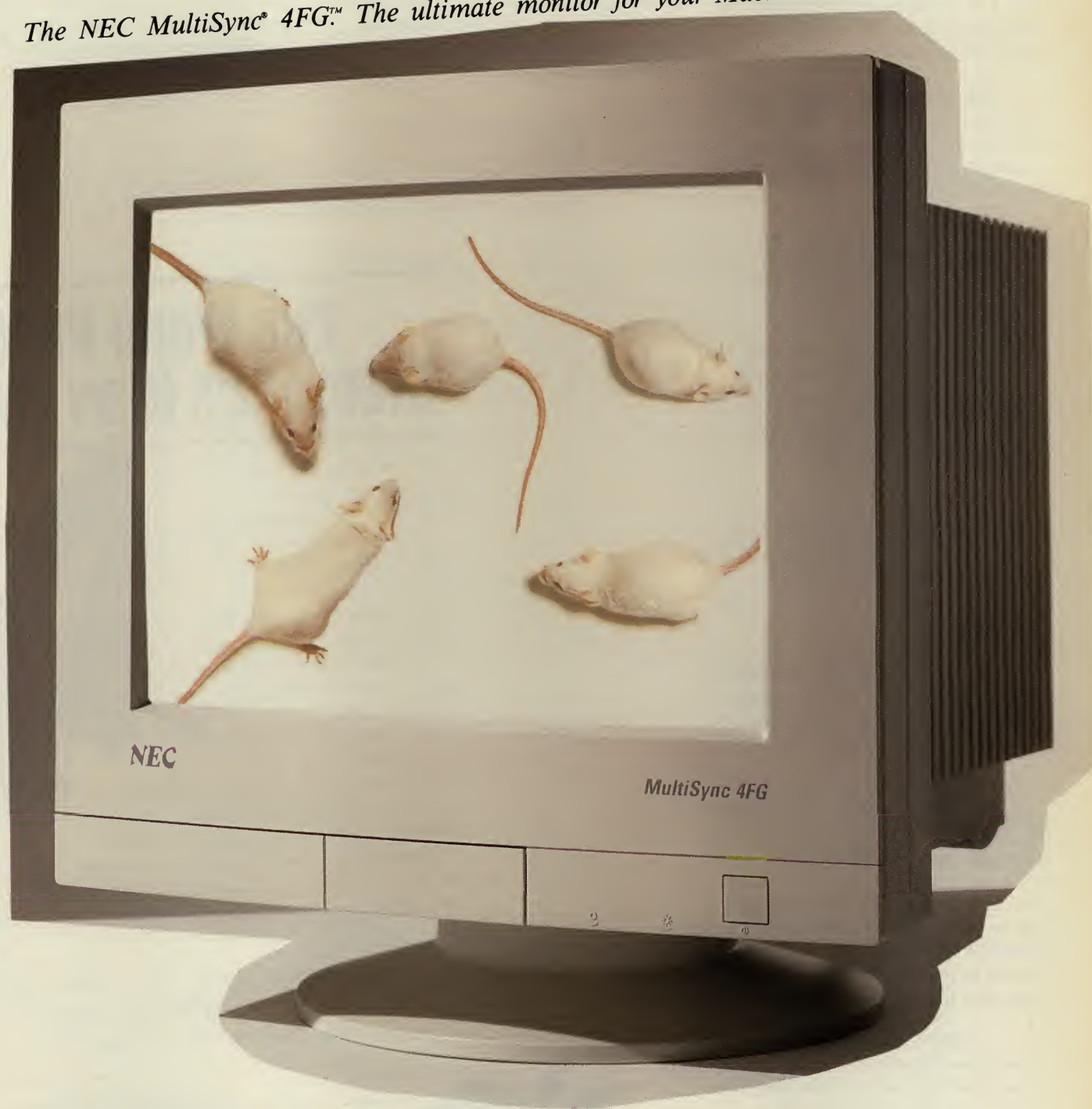
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Announcing a

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*-MacUser Magazine
Aug. '92*

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The NEC MultiSync® 3FGx™ monitor.



In 1992, the only monitor to snag the coveted five-mice rating was an NEC monitor: the MultiSync 4FG. After running it and 13 others through the most rigorous technical evaluation they'd ever used for testing monitors, *MacUser* magazine concluded, "If you're looking for the sharpest display, the NEC MultiSync 4FG should be your top choice." What more can we say? Glad you asked.

Our **AccuColor™ Control System** prompted *MacUser* to make special mention of the "easy color adjustments." AccuColor lets you adjust on-screen colors, so if you're looking for mouse-tail pink, that's what you'll get.

If, however, color control is not a priority for you, you'll be very happy with NEC's MultiSync 3FGx monitor, which shares almost all of the 4FG's award-winning features. Both monitors produce sharp, bright images, crisp graphics and vibrant colors. An Invar shadow mask provides increased brightness without loss of focus.

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How do you make an NEC MultiSync monitor work with your Mac? Just plug it in, using NEC's free FG/Mac cable adapter. It works with the Mac's on-board video, so you won't need an add-in video board*.

Both monitors are compatible with the Mac® II family, Quadra™ series, LC's, PowerBooks™ and PC systems. So you can use just one monitor for both types of platforms. *MacUser* noted the "powerful and versatile controls make switching from a Mac to a PC a snap."


And to make these monitors as user-friendly as possible, we've included ergonomic features such as a tilt/swivel base and up-front user controls. Plus, our Reduced Magnetic Field™ technology meets the strict Swedish MPR II guidelines for magnetic field emissions.

There are lots of reasons for considering an NEC MultiSync monitor for your Mac—the sharp, bright images, the vibrant colors, the large display area, the flexibility, the compatibility—to name five. And the 🐭🐭🐭🐭🐭 to name five more.

For more information on our award-winning monitors, call 1-800-NEC-INFO (in Canada: 1-800-343-4418). Or for a complete brochure via fax, call NEC FastFacts™ at 1-800-366-0476, request #62234.

*For Macintosh 640 x 480 resolution, just attach NEC's FG/Mac cable adapter and plug into: Macintosh IIx, IIcx, LC, LCII, IIvx, IIvi, Quadra™ 700, Quadra 900, Quadra 950, Performa™ 400, Performa 600, PowerBook™ 160, PowerBook 180, and the PowerBook 210 and PowerBook 230 with either the DuoDock™ or MiniDock™. Or with an add-in video card: Macintosh II, IIx, IIcx, IIfx, PowerBook 140, PowerBook 145, and PowerBook 170. Get the 640 x 480 FG/Mac adapter free by calling NEC at (312) 622-7427 8:30AM-5PM CST.

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Gateways

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Novell plans native NetWare access

*Tools will support
Macs without NLM*

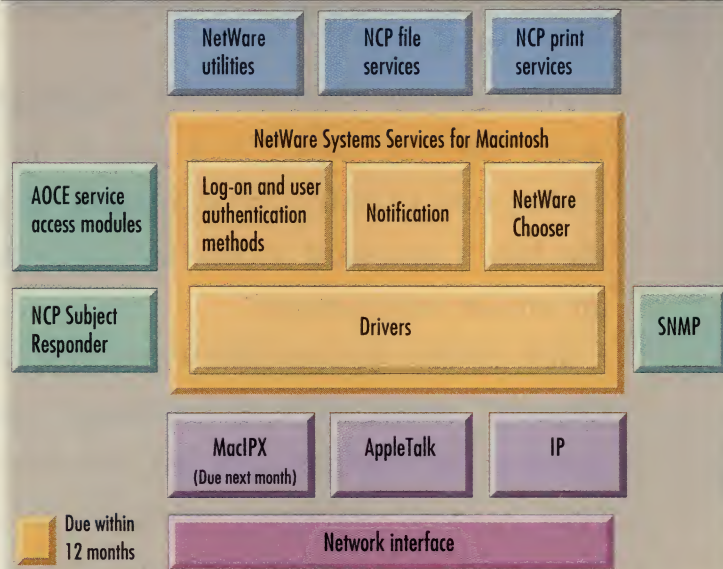
By April Streeter

Salt Lake City — A Macintosh system extension under development at Novell Inc. will give Macs native access to NetWare servers, the company revealed last week at the BrainShare '93 conference here.

The Provo, Utah-based networking giant will roll out a suite of software modules called NetWare Systems Services for Macintosh (NSSM) within 12 months. NSSM will not require that users have the NetWare for Macintosh NLM (NetWare Loadable Module) installed on a Novell server. Rather, it will provide support for Novell's NetWare Core Protocols, and directory and user services in Mac system software.

The first piece of the system, MacIPX, will deliver native IPX (Internetwork Packet Exchange) support for the Mac. Due next month, MacIPX will be offered to users under a site license, and developers will be able to bundle the stack with applications.

How Macs go native on NetWare



Source: Novell Inc.

While the forthcoming MacIPX does not provide file and print services, developers can use it to write the applications that will run on Macs and other clients in IPX networks.

"Right now, we want to get MacIPX on as many Macs as possible," said Steven Ethier, principal

engineer of the MacIPX stack for Novell. "It's going to be a big win for cross-platform solutions."

While Novell assured Mac network managers at BrainShare '93 that the NetWare for Macintosh NLM is "not going away any time soon," the company said NSSM and native IPX support for the Mac can benefit network managers trying to contain the proliferation of protocols on the network.

"AppleTalk is a real thorn in our side," said Richard Hornbaker, a network engineer who preferred that his company name be withheld. "If we can get rid of AppleTalk and do it cleanly with IPX, we will," he said.

In addition to allowing Mac applications to make calls to NetWare 4.0's file and print services, See Novell, Page 18

Tech Analysis

Meeting face to interface

By Michael Miley

The word "meeting" is a dirty word at many organizations. While group discussions are aimed at increasing productivity, too often their result is exactly the opposite: Travel requirements, delays and wayward discussions are just a few of the well-known reasons why meetings have such a bad reputation.

Increasingly, however, organizations are eschewing face-to-face gatherings in favor of face-to-interface meetings.

Computer conferencing products offer real-time alternatives to meetings, while bulletin boards, with their forums and threads, let people collaborate over time. Both allow forms of group work that ordinary electronic mail is simply not equipped to handle. Both also can encourage deep changes in the way people conduct their business. Real-time collaboration got its first

big boost with products such as Timbuktu from Farallon Computing Inc. of Alameda, Calif., and ScreenLink (formerly CarbonCopy Mac) from Datawatch Corp. of Durham, N.C. Both products allow remote control of one Mac by another, with full access to the files and programs on that Mac, and both can extend themselves to groups and work over telephone lines. Collaborative use of these products includes remote training and customer service.

Real-time interaction. Timbuktu and ScreenLink take remote control of the other Mac's Finder; hence, groups work serially with such programs. By contrast, true interactive group conferencing is enabled using Vis-A-Vis from WorldLinx Telecommunications Inc. of Mississauga, Ontario, or Aspects Document Collaboration See Meetings, Page 22

Synergy's VersaTerm-Link puts friendly face on Internet services

By Nathalie Welch

Reading, Pa. — An upcoming upgrade to Synergy Software's VersaUtilities TCP/IP connectivity tools will give users a graphical interface to Internet mail, news and directory services.

The Internet interface, called VersaTerm-Link, will be included in VersaUtilities 1.1, which is due in June for \$145. VersaTerm-Link will offer a point-and-click address book and the ability to read and compose mail off-line.

VersaUtilities, developed by Abelbeck Software, also based here, is bundled with Synergy's VersaTerm terminal emulator, which will rise from \$149 to \$195 when VersaTerm-Link ships, and the \$295 VersaTerm Pro. VersaUtilities can also be used with other programs that are compatible with the Macintosh Communications Toolbox or MacTCP.

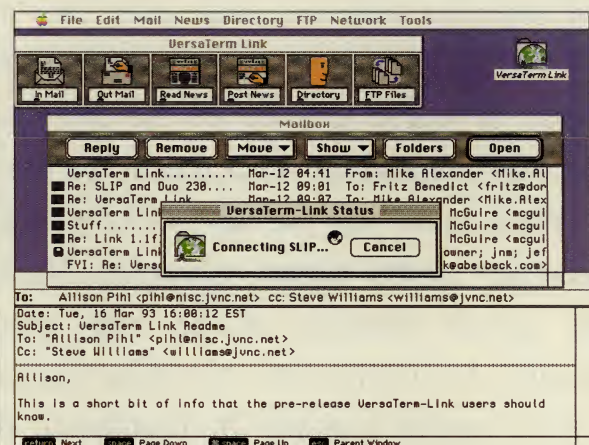
Users will be able to access Internet services via a palette of icons. VersaTerm-Link will send mail via SMTP

(Simple Mail Transfer Protocol), while the POP3 (Post Office Protocol) will be used to retrieve mail. The Network News Transfer Protocol will be built into the application to let users post and read network news messages, while Finger, Whois and Ph protocols will be incorporated for retrieval of directory information.

Aladdin Systems Inc.'s StuffIt is incorporated into VersaTerm-Link to provide automatic compression of files. Recipients must have VersaTerm-Link StuffIt or StuffIt Expander, a free utility not included with the package, installed on their Mac.

VersaUtilities includes the Telnet (Terminal Session Protocol for TCP/IP) tool; the FTP (File Transfer Protocol) Client; and a Serial Line Internet Protocol (SLIP) extension, which lets users log onto a SLIP server from VersaTerm-Link.

Synergy Software is at 2457 Perkiomen Ave., Reading, Pa. 19606. Phone (215) 779-0522 or (800) 876-8376; fax (215) 370-0548. □



Synergy Software's VersaTerm-Link provides users with a palette of icons to access Internet news, mail and directory services.

StarNine smooths route from QM to Vines, Unix

By Nathalie Welch

Berkeley, Calif. — StarNine Technologies Inc. this week will ship a new gateway between CE Software Inc.'s QuickMail and Banyan Systems Inc.'s Vines Mail and unveil a new version of its Mac-to-Unix gateway.

► **Mail*Link for Vines/QM.** The gateway will reside on a QuickMail server with direct or bridged connection to a Banyan Vines network to let QuickMail users exchange mail with Vines users. Banyan's Vines Mail server sup-

ports direct AppleTalk connections.

The StarNine gateway is compatible with Vines 5.0 and will convert QuickMail addresses for use by StreetTalk, the distributed naming utility in Vines.

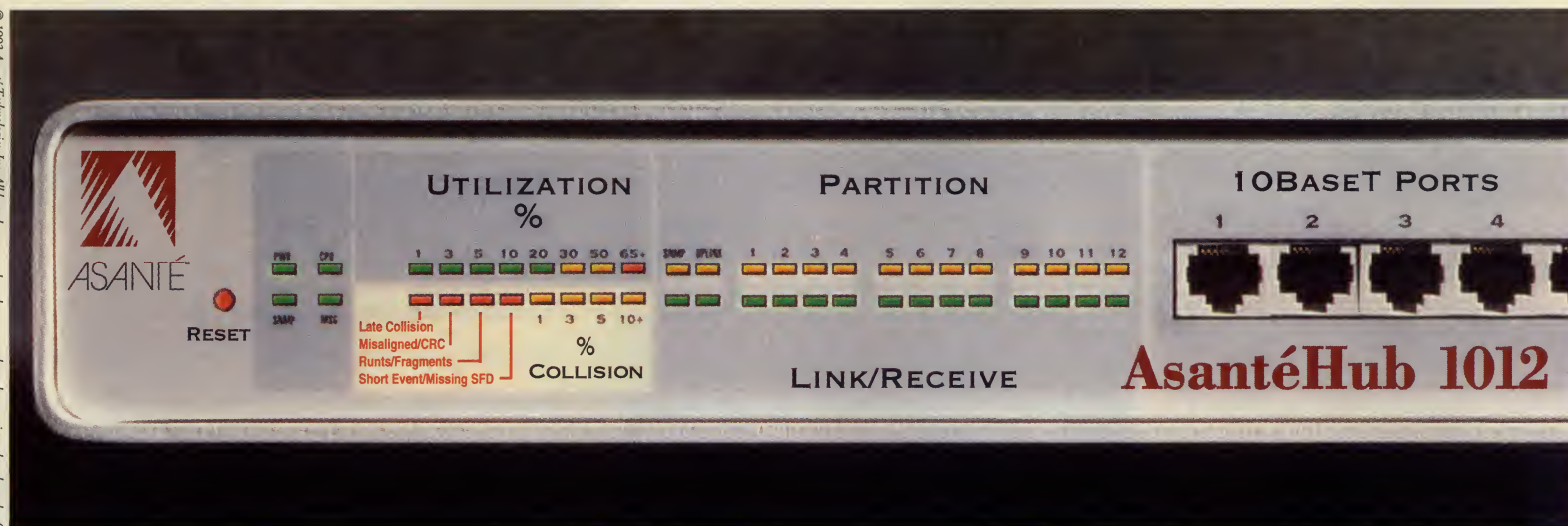
Administrators can configure the gateway to send Mac files as enclosures via the Applesingle file-enclosure format or by sending only the data fork of the file.

► **Mail*Link SMTP 2.2 for QuickMail.** Due next month, this provides SMTP (Simple Mail Transfer Protocol) connectivity for

QuickMail users needing to send mail over TCP/IP networks.

Enhancements include the ability to support up to four Domain Name Servers with the same name and different Internet Protocol addresses; additional alias formatting options; and minor modifications to ensure compatibility with QuickMail 2.6, which was released last week.

Both gateways are \$595 for 10 users. StarNine Technologies Inc. is at 2126 Sixth St., Berkeley, Calif. 94710. Phone (510) 548-0391; fax (510) 548-0393. □



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[Remote out-of-band management lets you manage your network from anywhere in the world.]

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Cameo calls up file transfer capabilities

Teleconferencing app adds screen capture

By Nathalie Welch

San Jose, Calif. — Compression Labs Inc. has shipped a software upgrade for its Cameo desktop video teleconferencing system that lets users transfer files and capture screens during a conference call.

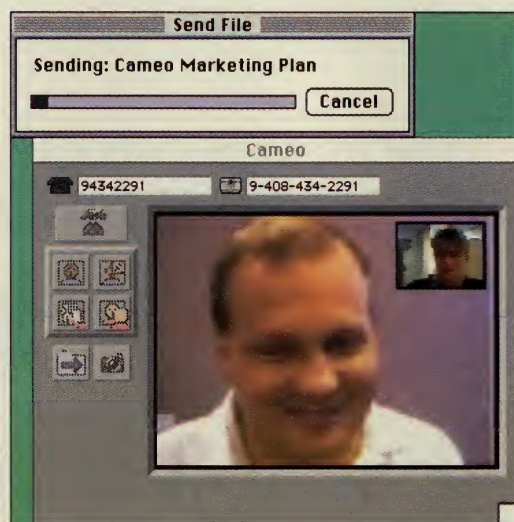
Cameo 2.0, available now, lets the \$2,095 Cameo Personal Video System Model 2001 send and receive Mac files at 56 Kbps over digital telephone lines. The Model 2001 requires that users install an ISDN (Integrated Services Digital Network) card, such as the \$1,695 Planet-ISDN card from Euronis of France, and a video display card to provide 15-frame-per-second, 24-bit-color video.

"Adding the ability to transfer files was a major improvement," said Craig Hansen, a faculty member at the University of Minnesota in St. Paul, who runs a program that lets college students tutor area high school students

via video desktop teleconferencing. "We were using an Ethernet network to move files around separately from the video application, but it is much more convenient to have [that capability] in Cameo."

The new software lets users capture a still-frame image of a portion of a screen or take a snapshot using the video camera or a presentation graphics stand. The captured image can then be transmitted and displayed on a remote Mac.

Cameo 2.0 can be used with third-party video applications, such as RasterOps Corp.'s Media Grabber, to capture and record video images to disk. In addition to supporting RasterOps' \$999 24STV and \$3,499 24XLTV video cards, the system now supports SuperMac



Compression Labs' upgraded software lets users capture screen or camera images and transmit them to remote Macs.

Technology Inc.'s Video Spigot, Fast Electronics U.S. Inc.'s Screen Machine Card and RasterOps' MediaTime cards.

Upgrades are free.

Compression Labs Inc. is at 2860 Junction Ave., San Jose, Calif. 95134. Phone (408) 435-3000; fax (408) 922-4608. □

Multi-Tech lets loose modem-escape technology

By Nathalie Welch

Mounds View, Minn. — Multi-Tech Systems Inc. is offering a new modem-escape technology it claims is more reliable than the patented method from Hayes Microcomputer Products Inc. The technology, which Multi-Tech will offer free to other modem developers, is the latest shot in an ongoing feud between Hayes and other vendors.

An escape sequence tells a modem to leave the on-line state, where it

sends and receives data, and enter the command mode, where it receives commands and sends confirmation or error messages from the compiler. The techniques used to signal escapes are the heart of a legal and technical battle that was triggered several years ago by Hayes successfully forcing competitors to license its patented technique, called the Heatherington '302 sequence.

Multi-Tech originally developed an alternative technique called TIES (Time Independent Escape Sequence), which was implemented in 1991 by several modem vendors in response to Hayes' patent litigation. Recently, Atlanta-based Hayes waged a negative advertising campaign to convince users of TIES-based modems they were in danger of losing data during transmissions.

Last month Multi-Tech began

supporting a new escape sequence, <BREAK> AT <CR>, in all its modems in addition to TIES.

Multi-Tech said its new escape sequence, which uses the out-of-band "break" signal, makes it impossible for a file transfer to accidentally trigger an escape to command mode. Both TIES and Hayes' technologies use an in-band escape sequence.

"Hayes continues to throw fear, uncertainty and doubt about escape sequences when there was never a problem," said Tom Hiemerman, Multi-Tech Systems vice president of sales and marketing. "We are providing something free to other modem makers that Hayes admitted doesn't infringe but works a lot better."

Multi-Tech Systems Inc. is at 2205 Woodale Drive, Mounds View, Minn. 55112. Phone (612) 785-3500; fax (612) 785-9874. □

Novell

From Page 16

NSSM will support directory services and user log-on security. A network browser, which Novell will call NetWare Chooser, will supersede the Mac's own Chooser to let users view and access services on NetWare 4.0 networks.

Novell is developing drop-in modules that will add support for AOCE (Apple Open Collaboration Environment) directory, messaging and security services. A responder module that will give Mac, Windows, OS/2 and Unix clients in IPX networks peer-to-peer file sharing is also planned.

Also within the next year, Novell said it will port pieces of the NSSM architecture to the NetWare for Macintosh NLM to give AppleTalk networks access to 4.0's directory and messaging services. □

GDT gives Macs NetWare print links

Burnaby, British Columbia — GDT Softworks Inc. is expanding its PowerPrint line to give Macintosh users on NetWare networks access to IBM PC and compatible printers.

PowerPrint/NW, due in May and priced at \$499 for up to 50 users, lets Macs share a variety of dot-matrix, inkjet and laser printers via the Novell network.

Featuring Chooser-level printer

drivers, PowerPrint/NW gives Mac users control over printer functions, including image resolution, bin and tray selection, and double-sided printing.

GDT Softworks Inc. is at 4664 Lougheed Highway, Suite 188, Burnaby, British Columbia V5C 6B7, Canada. Phone (604) 291-9121 or (800) 630-6222; fax (604) 291-9689. □

Gateways

BRIEFS



Compatible boosts router throughput

Boulder, Colo. — Compatible Systems Corp. this month released an upgrade to its RISC•Router 3000E software that pushes the router's Ethernet throughput to the limit.

Version 1.1 of Compatible's router software provides throughput of 14,800 packets per second, the maximum possible with current Ethernet technology, according to the company. The upgrade is now shipping with all RISC•Router 3000E Ethernet-to-Ethernet routers.

Upgrades for current users are free from Compatible, or users can download the software on the Internet and AppleLink.

The \$2,995 RISC•Router 3000E also includes two LocalTalk ports; support for AppleTalk, TCP/IP and DECnet protocols; built-in security; and Mac router-management software.

Compatible Systems Corp. is at P.O. Box 17220, Boulder, Colo. 80308. Phone (303) 444-9532 or (800) 356-0283; fax (303) 444-9595.

AST delivers expandable LocalTalk-to-Ethernet router

Ijamsville, Md. — AST Communications Inc. is shipping a LocalTalk-to-Ethernet router with expandable LocalTalk support.

The \$2,500 ComTalk H200 includes two Ethernet ports. As many as six LocalTalk ports may be added by installing expansion cards. The first two LocalTalk cards cost \$200 each; additional cards are \$750.

AST bundles AppleTalk-to-TCP/IP gateway software with the H200.

The company said users of its single-port Ethernet routers can now add an Ethernet expansion card for \$1,100.

AST Communications Inc. is at 607 Dr. Perry Road, Ijamsville, Md. 21754. Phone (301) 831-1182; fax (301) 874-5255.

PSI app aims to FAXcilitate conversion of faxes

Campbell, Calif. — Rekeying a fax may become a thing of the past with FAXcilitate software from PSI Integration Inc.

The software, which incorporates optical character recognition technology from Caere Corp. to let users convert faxes into a variety of word processing and spreadsheet formats, is now being bundled with all PSI fax modems.

Current owners of PSI modems can purchase the software for \$49.95.

The software puts a fax menu alongside an open application's menu bar, presenting users with in and out baskets, phone books, and fax logs. A RapidFax feature lets users send faxes without opening an application.

PSI Integration Inc. is at 851 E. Hamilton Ave., Suite 200, Campbell, Calif. 95008. Phone (408) 559-8544 or (800) 622-1722; fax (408) 559-8548.

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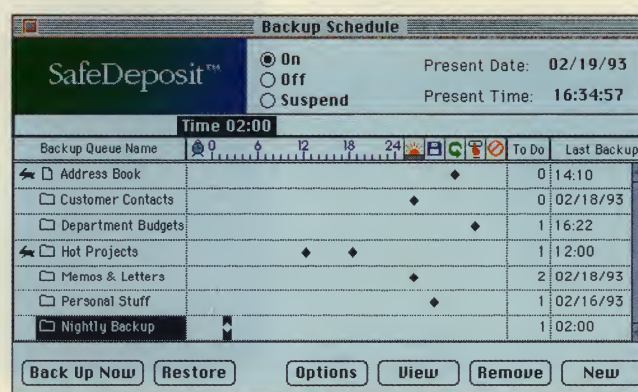
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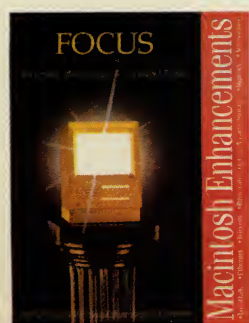
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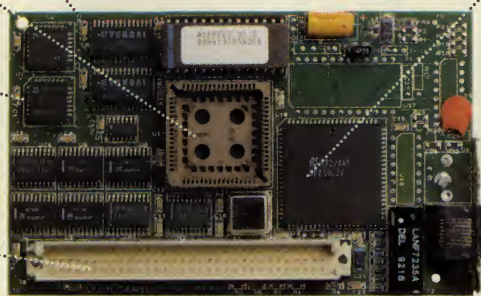
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News Analysis

Desktop teleconferencing looking for Mac market

By Nathalie Welch

Is Mac video desktop teleconferencing a budding industry or technology looking for a market?

Desktop video teleconferencing systems have been available on the IBM PC and compatible platform since 1989. In that year, 1,200 video conferencing systems shipped, according to Mountain View, Calif.-based Market Intelligence Resource Corp. The research company expects that number to rise to more than 1 million by 1999. But it is unclear how many of those systems will be Mac-based and how the availability of Mac systems will spur the industry.

Early adopters of Mac video desktop teleconferencing are divided between users weaned on corporate-managed video teleconferencing systems and companies wanting to reduce travel budgets while still benefiting from the input of remote colleagues.

"I am ready to buy as soon as someone brings a mature desktop product to market," said Jeffery Boverman, senior system analyst at Northrop Corp.'s B-2 Division, based in Los Angeles. "Before I actually purchase one, I need to see

something that works consistently."

Boverman said that users of Northrop's current system, composed of Sony analog video components integrated into a PictureTel compressor-decompressor (codec) system from PictureTel Corp., requested easier access to the video teleconferencing network. He has approached ShareVision Technology Inc. about a possible purchase of its \$4,499 ShareView Plus system.

"Even though we are probably saving the company millions of dollars using our present system, users wanted to be able to teleconference from their desktop [Macs]," Boverman said.

The high cost of the currently available and soon-to-ship systems, however, is a deterrent, he noted.

"I would not pay more for one of these units than the cost of the Mac that I plan to install it in," Boverman said. "Thinking about paying over \$3,000 gives me a little heartburn."

Video for \$1,000. According to the Market Intelligence study, the price of desktop video teleconferencing systems in 1989 was \$19,000. But as a result of decreases in codec chip prices and

Mac video teleconferencing systems

Company	Name Price	Transmission methods	Frames per second	Color	Screen- based phone	File transfer
Northern Telecom Inc. 200 Athens Way Nashville, Tenn. 37228 (615) 734-4251	Visit Video \$3,800	Switched 56 64-Kbps lines ISDN	10 to 15	No	Requires NT Meridian telephone	Yes
Compression Labs Inc. 2860 Junction Ave. San Jose, Calif. 95134 (408) 435-3000	Cameo Personal Video System 2001 \$2,095 ISDN card, \$1,696 Video card, \$700	ISDN	15	Yes	Requires external telephone	Yes
ShareVision Technology Inc. 2951 Zanker Road San Jose, Calif. 95134 (408) 428-0330	ShareView \$4,499	Analog	7 to 10	Yes	Does not require external telephone	Yes
NUTS Technologies Ltd. 101 Metro Drive, Suite 750 San Jose, Calif. 95110 (408) 441-2166	Hello 918* Analog, \$4,000 ISDN, \$5,750	Analog 64-Kbps lines ISDN	30 fps over ISDN/64-Kbps 5 to 12 fps over analog	Yes	Does not require external telephone	Yes

*Not yet shipping.

the substitution of hardware-intensive systems by less-expensive software-extensive systems, the price of a system could be less than \$1,000 by 1999.

Prices of Mac-based systems, first introduced in late 1992, are generally about \$5,000. Features becoming standard include file transfer, an interactive "whiteboard," still-image capture, screen-based phone management and, of course, real-time video.

One of the most important technical considerations from the cus-

tomers standpoint is whether the system operates over standard analog telephone lines or requires ISDN (Integrated Services Digital Network), switched 56 or 64-Kbps lines.

Judith Sim, a marketing specialist at Oracle Corp. of Redwood Shores, Calif., is purchasing a ShareView system to enhance her company's Oracle Express mobile product demonstration program. It was the system's ability to operate over standard analog telephone lines that clinched the deal.

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Meetings

From Page 16

System from Group Technologies Inc. of Arlington, Va. Several users can simultaneously work in real-time on a common project, combining text, drawing, annotation and real-time chat features, over a LAN or modem connection. Uses of Aspects include group word processing by education sites and remote document editing among architects, engineers and graphic designers, where highly graphical documents are changed, annotated or edited by remote partners.

Padma Medury, a multimedia

consultant at the Instructional Computing Resource Center at West Virginia University in Morgantown, brought Aspects in for use in the English department's Macintosh lab. She targeted it for use in peer writing and editing sessions where as many as 16 students could write together simultaneously. "We used it as a brainstorming tool, as well as for collaborative in-class writing, and it was quite successful," Medury said.

Long-distance conferencing suffers from the lack of physical presence, so some products are adding real-time video capability (see story, above). With teleconferencing software and hardware — systems that include a computer "whiteboard" and a video camera — users can collaborate on complex documents while simultaneously transmitting images of themselves or objects in the room.

At NASA's Jet Propulsion Laboratory in Pasadena, Calif., for example, Jim Jacobson, supervisor of institutional telecommunications and office automation, has been testing Northern Telecom Inc.'s Visit Video systems over the lab's

ISDN (Integrated Services Digital Network) and switched 56 lines.

"We've conducted group meetings; participated in panel discussions all over the United States; transmitted prerecorded video to the East Coast; and connected up with sites in England, Canada and Australia," Jacobson said. "Our meetings are 95 percent as effective as if we were in the room together."

Collaboration over time.

Real-time, interactive conferencing is just one alternative to the face-to-face meeting. Another option is a bulletin board system, which lets users create forums and threads for ongoing projects.

The first commercial Mac "bulletin boards" were extensions to E-mail: Both CE Software Inc.'s QuickMail and Lotus Development Corp.'s cc:Mail have public message areas for posting messages, like a cork board hung in an office. Users can sort these messages like any other E-mail, but the hierarchical structure of a true BBS (with forums, topics and threads) is lacking, hence the need for LAN-based bulletin

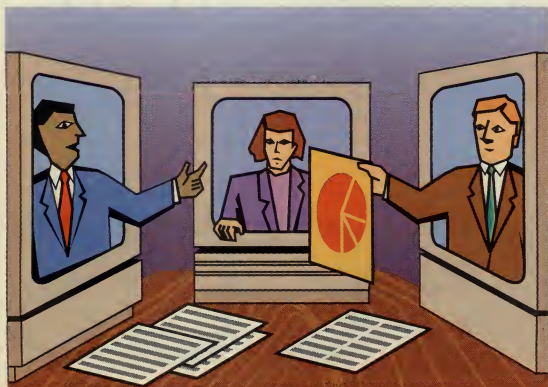
boards, such as PacerForum from Pacer Software Inc. of La Jolla, Calif.; Inforum from MacVONK•USA of Narberth, Pa.; or even Notes from Cambridge, Mass.-based Lotus, which is much more than a BBS and is due to be released with a Mac client next month.

PacerForum, with its highly graphical interface and automatic prioritizing, is being used in an unorthodox way by Telemorphix Inc., a multimedia company whose base is in San Francisco but whose 20 or so "virtual offices" and members are as far-flung as Los Angeles, New York and London.

All business is conducted on the forum, and individual threads can include graphics and sound files, launchable from a client's Mac through the use of aliases. Telemorphix's first project is an interactive TV show called "21st Century Vaudeville," where watchers can call in and become video characters on the show — a sort of real-time, interactive, multimedia "Monty Python's Flying Circus."

"The whole TV program was con-

See Meetings, next page



NEVIN BERGER

Meetings

From previous page

ceived and developed over PacerForum," said Andy Harris, co-founder and president of Telemorphix and a former AppleLink sysop. "We're against endless meetings, which can waste a lot of time. The artists, writers, animators, engineers and tech-support people who created the show develop topics and threads on the forum, and text, graphics and animations were sent over modems. The result — '21st Century Vaudeville,' a TV show where the audience can participate — is a mirror image of an open company, our more human interface to the corporation."

Harris contrasts BBSes to E-mail, lauding their open structure. "Early on, we banned E-mail from our company because E-mail tends to make information tunnels where the

more important the information is, the more it tends to get hidden."

PacerForum, unlike Lotus Notes, however, was not specifically designed for remote access and does not have synchronization abilities built in for the "occasionally" connected client working off-line. Remote connections are done through AppleTalk Remote Access, and synchronizing files is a manual process without a product such as No Hands Software's Magnet.

Expanding the range. Products with telecommunications abilities built in for more wide-area connections include hi-BBS from XBR Communications of Montreal; Second Sight from The FreeSoft Company of Beaver Falls, Pa.; TeleFinder Group Edition from Spider Island Software of Irvine, Calif.; and First Class from SoftArc Inc. of Scarborough, Ontario. These products are generally designed for bulletin boards with hundreds of users and include E-mail, file

transfer and, in certain cases, real-time conferencing features. XBR's hi-BBS supports X.25 connections for worldwide local access.

The Scarborough Board of Education, for example, uses Scribe, a First Class BBS, as a public meeting place for more than 800 people in the area outside Toronto. "We have hundreds of teachers, students and administrators remotely accessing some 80 different conferences," said Keith Raynor, the Scribe administrator. □

Video

From previous page

"Analog capability was a primary consideration," Sim said. "We go to some very strange sites to make these customer calls. It seems that we are lucky just to have an analog line sometimes."

For desktop video teleconferencing systems to really have an effect, vendors and evangelists of the technology first must find a way to quantify the benefits of such a system to the company's bottom line. But putting a number to the value of real-time video connections is difficult at best, especially when companies are not sure they even need video to the desktop.

"I am not so interested in the video teleconferencing, although it's cute," said Joe C. Harris Jr., director of information technology at NBC of New York. He is responsible for getting Mac video desktop teleconferencing up and running at local NBC stations. "I like the collaboration stuff, particularly the interactive chalkboard. It will give me the ability to work at a true interactive level."

Video as a second language. But others said the video component is the essence of the system. "The video component is very important to my students," said Cara Naiman, a language instructor employed by Princeton, N.J.-based Berlitz International Inc. to participate in a pilot program to teach English as a second language to remote students using Northern Telecom Inc.'s Visit Video. "We can work collaboratively on things on the screen or discuss things about our respective environments by panning the system's camera."

Frank Catalano of Catalano Consulting in Sumner, Wash., who tracks technical trends for computer companies, said users should buck the video trend.

"We already have a great telecommunication device," Catalano said, "and it's called the telephone. Airborne Express mail and the telephone will be [video conferencing's] biggest competition."

Competitive advantage, a holy grail in today's tight economy, is a prime selling point being proffered by manufacturers of desktop video teleconferencing systems.

"Affordable video teleconferencing is bound to make an impact on the market," said Stetson Chun, president of NUTS Technologies Ltd., set to release its Hello 918 video system next month. "It is a tool vital to a global economy that is changing by the minute." □

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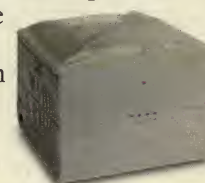
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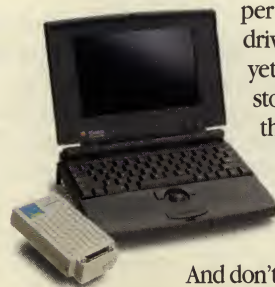
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MacroModel 1.5 heads for runway

Revamped modeler adds Bezier editing

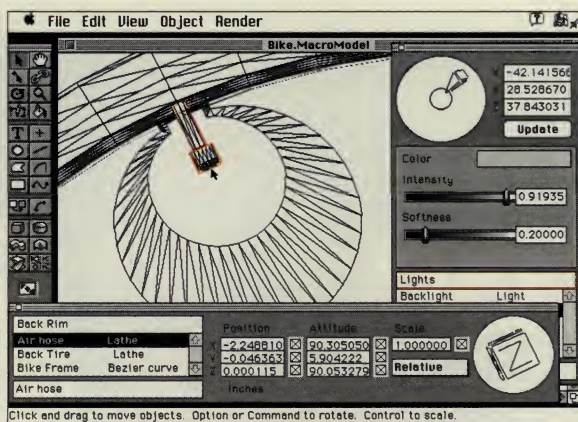
By Neil McManus

San Francisco — Macromedia Inc. is sculpting a new version of MacroModel that will let users edit with a Bezier pen tool and deform entire sections of 3-D objects.

MacroModel 1.5 for Macintosh, due by May for \$1,495, will be file-compatible with a new Windows version of the program.

The Mac version features several new tools:

- **Bezier pen** will let users edit control points on a path.
- **Bevel extrude** will let users preset measurements for bevels.
- **N-Gon** creates polygons with any number of sides.
- **Scaled sweep** scales a shape along a path.
- **Deformation tools**, such as twist, bend and taper, can be applied to sections of 3-D objects.
- **Resizable construction objects** will let users adjust grids and lines in 3-D space.



Macromedia's spline-based MacroModel 1.5 lets users extrude, lathe and sweep any 2-D object into 3-D. It also has a new cross-section tool like the one in Macromedia's Swivel 3D.

MacroModel 1.5 users will be able to adjust resolution by object. The new version will also import Encapsulated PostScript files and export RIB (RenderMan Interface Bytestream) shadows.

Jim Ludtke, principal of Ludtke Inc., a multimedia design shop based here, said his company is using a beta version of MacroModel 1.5 to create The Residents Freak Show, an interactive CD-ROM Ludtke is developing for The Voyager Company.

"The deformation tools are nice because they let you do things like take a character's head and twist it

around," Ludtke said. "Our CD-ROM has a character called Jello Jack who's kind of a blob. We use deformation to squash him."

Macromedia will bundle the Mac version with Pixar's MacRenderMan for \$1,795 and package it with MacroMind Three-D for \$2,495.

Users who purchased MacroModel 1.0 after Feb. 28 will receive a free upgrade. Upgrades for other users will range from \$149 to \$179.

Macromedia Inc. is at 600 Townsend St., San Francisco, Calif. 94103. Phone (415) 442-0200; fax (415) 442-0190. □

Cricket Draw springs forward with bound-text, CMYK editing

By Kirsten L. Parkinson

Islandia, N.Y. — Computer Associates International Inc. this week will ship an upgrade to CA-Cricket Draw III that lets users view and edit bound text on a curved path.

Like earlier versions of the \$249 object-oriented drawing program, CA-Cricket Draw III 2.0 lets users edit images as PostScript code as well as graphically.

New features include:

► **Bound-text editing.** Users can enter and view text and edit attributes such as kerning, superscripts and subscripts directly on a curved path. Bound text created in Version 1.0 of the program can also be viewed and edited on-screen in Version 2.0. Users of Version 1.0 had to unbind text before editing it.

► **Text manipulation.** CA-Cricket Draw III 2.0 converts text into Bezier curves that users

can resize, rotate, skew and fill with blends.

► **Embedded PostScript code.** Users can include PostScript code within Cricket Draw objects when copying them as PICT objects. This improves their output quality on PostScript devices when printed from other programs.

► **Color.** CA-Cricket Draw III 2.0 lets users work in several color models, including CMYK (cyan, magenta, yellow, black), RGB (red, green, blue) and HSL (hue, saturation, lightness). Users can choose a global model or a color model for individual objects in a document. The previous version let users edit only in RGB mode.

► **New tools.** A new Extrude tool adds depth to objects, and a Tweening tool lets users transform one object into another by specifying the beginning and end objects

See Cricket Draw, Page 26

Kodak presses Photo CD case with authoring app

By Carolyn Said

Rochester, N.Y. — Multimedia authoring on CD-ROMs is the next frontier for Eastman Kodak Co.'s Photo CD.

Kodak this week will announce Photo CD Portfolio, software that lets users create Photo CDs that include digital photos, audio files, graphics and text, and combine them in presentations. The CD-ROMs will not support QuickTime movies or other digital video clips, however.

Kodak said the authoring scheme could be useful for applications such as business presentations, training materials and narrated books.

The discs can be read by Unix, Mac, and IBM PC and compatible computers equipped with CD-ROM XA drives; users will also be able to view them on TV sets via Photo CD or CD-I players.

The Portfolio authoring software comprises three utilities:

- **Image-packer**, which converts TIFF files to Photo CD format.
- **Copy/merge**, which copies

Photo CD images from other discs.

► **Portfolio organizer**, which will let users combine images and audio data in linear and nonlinear sequences to create Photo CD-format multimedia presentations.

Kodak said it will publish an application programming interface that will let third-party applications output files to Photo CD Portfolio discs.

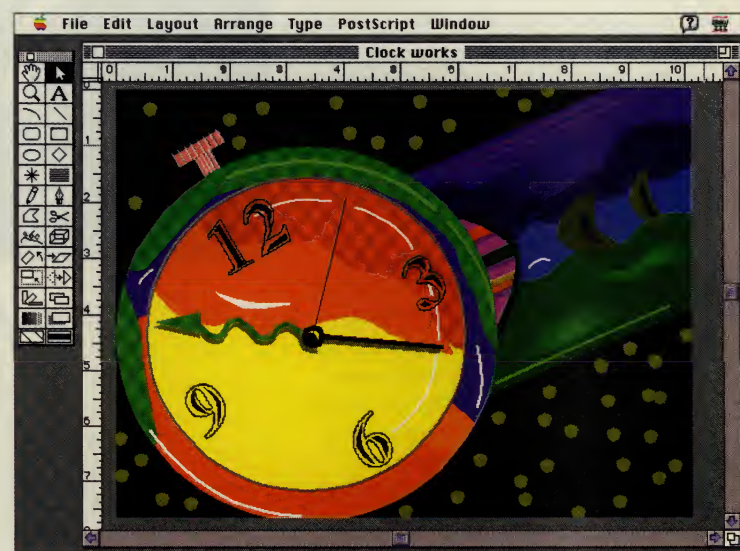
Photo CD Portfolio will let owners of the Kodak PCD Writer 200 CD authoring hardware create discs themselves. Kodak's \$5,995 SCSI-2 device uses a special bar-code reader to recognize Photo CD identification numbers. Other Photo CD Portfolio users will be able to bring Photo CD Portfolio files on floppy disks to a service bureau for mastering.

A version of Photo CD Portfolio for Sun SPARCstations, priced at about \$2,000, will make its debut this summer. The Mac version will ship later this year for an as-yet-undisclosed price.

In related news, Kodak this week will ship Kodak CD Publishing Soft-

ware for the Mac and Windows. The \$2,495 product will let commercial users format digital information in ISO 9660 CD format. The company also announced DOS versions of its Photo CD Access software for end users and developers.

Eastman Kodak Co. is at 343 State St., Rochester, N.Y. 14650-0519. Phone (716) 724-4000 or (800) 242-2424, Ext. 53. □



Version 2.0 of CA-Cricket Draw III lets users convert text, such as the numbers on this clock face, to Bezier curves and manipulate them like other objects.

Fuji hopes to give dye-sublimation printing a run

By Matthew Rothenberg

Hanover, Germany — Fuji Photo Film Co. Ltd. of Tokyo last week launched a 24-bit-color printer based on technology that the company hopes will torpedo the dye-sublimation competition.

The Fujix Pictography 3000, which made its debut at CeBIT '93 here, outputs 400-dpi continuous-tone CMY (cyan, magenta, yellow) images to paper or transparencies

measuring up to 8.5 by 12 inches. It requires rolls of special paper manufactured by Fuji.

The QuickDraw printer will ship with an Adobe Photoshop plug-in that lets users adjust hue and saturation, control gradation, and enlarge and reduce images from the Mac. It includes SCSI and GPIB (General Purpose Interface Bus) interfaces.

The Pictography 3000 is based on proprietary technology that uses

a laser to expose a sheet of photosensitive silver-halide film. Instead of the chemicals employed by traditional dye-sublimation printers, the film is run through a water bath to activate the inks; the dye image is then transferred thermally to the final medium.

According to Fuji Photo Film U.S.A. Inc., a Fuji subsidiary, the Pictography 3000 is slated to ship

See Fuji, Page 26

IT DOESN'T TAKE A ROCKET SCIENTIST TO FIGURE OUT WHICH 24-BIT COLOR GRAPHICS CARDS ARE THE FASTEST.

MacWEEK

Reprinted From January 13, 1992

BENCHMARKS

Hydra composite tests
(Results in ticks; lower is better)

■ RasterOps 24XLI
■ SuperMac Thunder/24

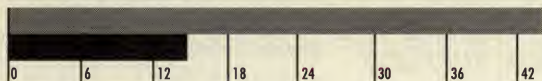
Unaccelerated 24-bit mode



Accelerated 24-bit mode



Accelerated 8-bit mode



All tests were run on a Mac IIx under System 7.0.1 with 20 Mbytes of RAM and with 32-bit addressing on. Hydra times are in ticks (1/60th of a second).

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Reprinted From MACWORLD
February 1993



Gauging Video Speed

REAL-WORLD TESTS

In our real-world tests, the size of the monitor dramatically affects performance for line scrolls: bigger monitors are slower. However, bigger monitors can have an advantage for page scrolls, where all the data on the new page is moved onto the screen in one step. Scrolls are good tests of actual performance because they are common tasks and because they cause the Mac to redraw a range of objects, from text to graphics.

Vertical Scroll

(in seconds)

Average results for a series of up and down scrolls (one line at a time) in Excel and Word documents.

Horizontal Scroll

(in seconds)

Average results for a series of left and right scrolls (one column at a time) in Excel documents.

Page Scroll

(in seconds)

Average results for a series of up and down scrolls (one screen at a time) in Word documents.

LOW-LEVEL QUICKDRAW TESTS

Low-level tests of QuickDraw command processing show theoretical best performance. The Basic Commands group includes QuickDraw commands that all vendors accelerate. Radius and SuperMac accelerate some other commands, but our tests show that this does not change these boards' performance.

All Commands

(speed compared to Apple 8•24)

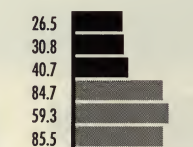
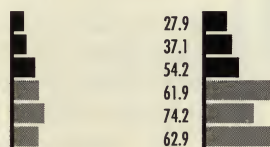
Relative performance in processing all 118 QuickDraw commands, using the industry-standard Hydra benchmark.

Basic Commands

(speed compared to Apple 8•24)

Relative performance in processing 25 common QuickDraw commands, using the industry-standard Hydra benchmark.

With 19-inch Monitors
SuperMac Thunder/24
SuperMac Spectrum/24 PDQ Plus
SuperMac Spectrum/24 Series III*
Radius PrecisionColor 24Xk
RasterOps 24XLI
Radius PrecisionColor 24X



With \$499 piggyback board installed

Shorter bars are better.

Shorter bars are better.

Shorter bars are better.

Longer bars are better.

Longer bars are better.

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MacUser

Figure 1: Speed Results

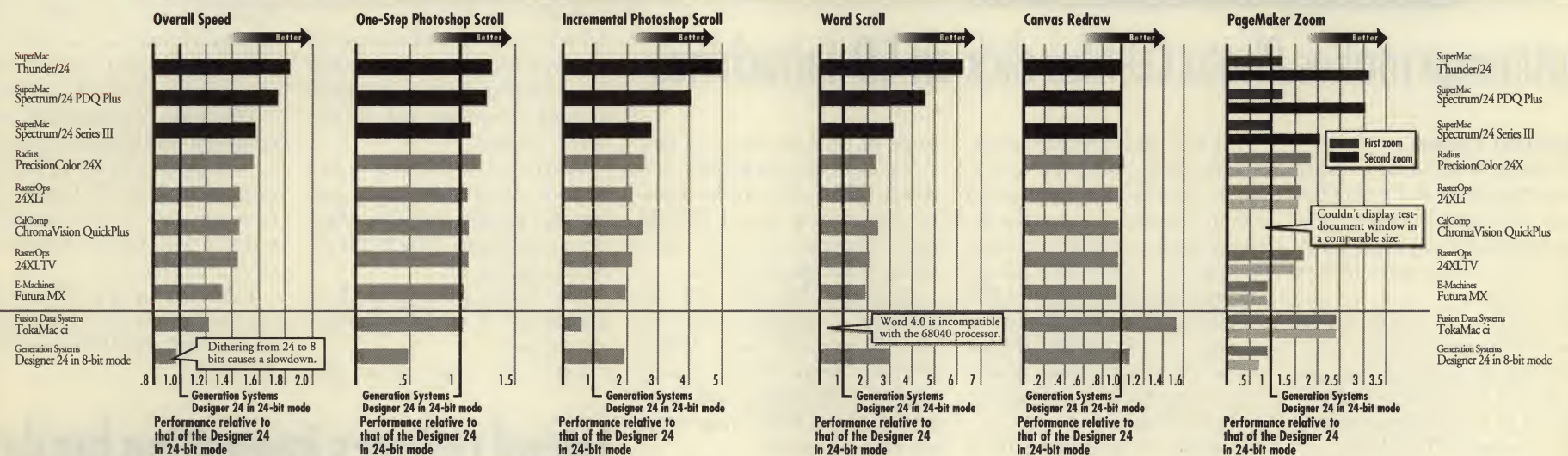


Figure 1: To find out if an accelerated-video card can improve the performance of some popular applications, we performed a suite of real-world tests. We ran all tests on the same Mac IIx connected to the same monitor. We compared the results with those of a Generation Systems Designer 24 unaccelerated-video card in 24-bit mode. We also subjected the Designer 24 to the same tests in 8-bit mode and repeated the tests with a Fusion Data Systems TakaMac ci to see the effect of CPU acceleration.

Overall Speed: The SuperMac Thunder/24 and Spectrum/24 PDQ Plus were fastest overall, almost doubling the speed of the Designer 24 unaccelerated-video card in 24-bit mode.

One-Step Photoshop Scroll: Many users of 24-bit color frequently use Photoshop, so we scrolled through some 24-bit Photoshop images to see if the accelerated-video cards could beat our control product. The Thunder/24 was 25 percent faster than the unaccelerated-video card, and the TakaMac ci CPU accelerator offered no improvement at all.

Incremental Photoshop Scroll: In the incremental scroll, SuperMac's Thunder/24 was five times as fast as the unaccelerated-video card. The TakaMac ci was actually 40 percent slower.

Word Scroll: To see if Word users stand to gain anything from video acceleration, we scrolled through a ten-page text document and found that the SuperMac Thunder/24 was more than six times as fast as the Designer 24. The SuperMac Spectrum/24 PDQ Plus came in a close second, and all the other cards were about twice as fast as the unaccelerated card. As 24-bit color seems a waste for Word users, we ran the same test on the Designer 24 in 8-bit mode and found that it was nearly three times as fast as in 24-bit mode, beating the majority of the accelerated-24-bit cards. We could not run the test with the TakaMac ci, because Word 4.0 is incompatible with the TakaMac ci's 68040 processor.

Canvas Redraw: We were surprised to find that the accelerated-video cards did nothing to speed up a Canvas redraw. The one product that really helped in this task was the TakaMac ci, providing that this task was primarily a compute-intensive one, a task for which video accelerators are not well suited.

PageMaker Zoom: Finally, we zoomed out to a 100-percent view from a 400-percent view of a PageMaker document consisting of text and a 24-bit-color image. We then repeated the same test to see if the cards were caching any of the video data. All the accelerated-video cards, with the exception of the Radius PrecisionColor 24X and the two RasterOps cards, performed the second zoom much faster than they did the first. The Designer 24 card was slower in 8-bit mode than it was in 24-bit mode because the 24-bit graphic had to be dithered for the 8-bit display.

Reprinted From May 1992

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The Hydra QuickDraw™ performance test has become the standard for evaluating the speed of 24-bit color graphics cards. As you can see, Thunder/24™, Spectrum/24 PDQ Plus™, and Spectrum/24 Series III™ outperform all the other 24-bit color graphics cards on the market.

And at \$999 the new Spectrum/24 IV™ is hard to beat. Faster than the Series III, yet the same low price.

So, don't waste anymore time or money. Take it from the experts and call for a copy of the complete test results.

And you don't have to be a rocket scientist to see just how fast SuperMac graphics cards are.

For your nearest Authorized Reseller, call **800-334-3005**. For information via fax, call SuperFacts:SM 800-541-7680.



NetScrap handles heap of file types

By April Streeter

Mississauga, Ontario — EveryWare Development Corp. next month will roll out a client-server image database that can store almost any kind of Mac document.

NetScrap, to ship in a \$295 three-user package, can archive image and sound files, QuickTime movie clips, or binary text. Besides three clients,

the package includes server software based on a runtime version of Butler, EveryWare's Data Access Language (DAL) database server for the Mac (see MacWEEK, May 11, 1992).

Unlike client-based programs such as Aldus Corp.'s Fetch that search and retrieve documents via System 7's file-sharing feature, NetScrap clients send queries to the

DAL server's database back end, which performs searches and file transfers.

NetScrap will let users archive full-size images in the database, making backup a one-step process, the company said. Files can be viewed at full size or as eight-bit thumbnails.

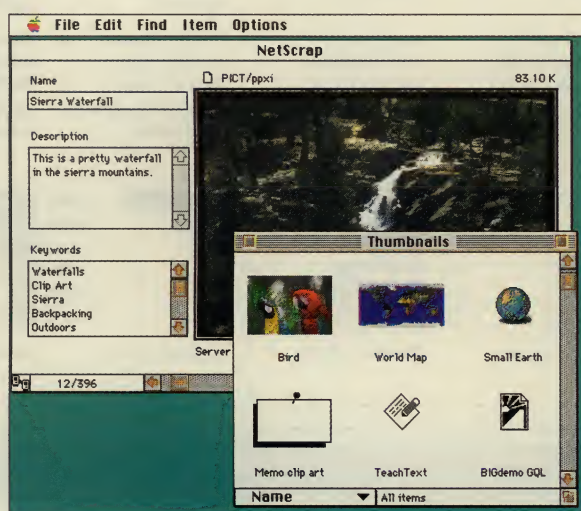
According to beta-tester William Radcliffe, technical manager at AXS/Optical Technology Resource Inc. of Berkeley, Calif., "Client-server is the clear next direction for image and document management because it gives more options on how users share archived images."

NetScrap will ship with an application programming interface that will allow users to customize the database with a DAL-compliant scripting program such as HyperCard.

An unlimited-user version of NetScrap is \$995.

EveryWare Development Corp. is at 2176 Torquay Mews, Mississauga, Ontario L5N 2M6, Canada. Phone (416) 819-1173; fax (416) 819-1172. □

EveryWare's NetScrap image-archiving program is based on a DAL server. Clients send search requests to the server using keywords; the server sends back images in their original format or as eight-bit thumbnails.



OptImage makes Photo CD files click on CD-I machines

By Kirsten L. Parkinson

West Des Moines, Iowa — A new Adobe Photoshop filter from OptImage Interactive Services Co. promises to help developers incorporate Photo CD images into their CD-I creations.

The plug-in lets users convert Photo CD images to QHY (Quantized High Y), a CD-I format that can be read by OptImage's MediaMogul CD-I authoring system as well as consumer CD-I players.

The \$400 filter is available as part of MediaMogul Mac, the company's \$7,500 CD-I development and authoring system that bundles the MediaMogul application and other development tools. MediaMogul Mac users can add the filter for \$80.

OptImage this month also shipped upgrades to its \$5,000 MediaMogul and \$2,500 Script to Disc applications. MediaMogul 1.2 adds support for the QHY format.

Running on OptImage's \$10,795

hardware emulator, Script to Disc 1.2 lets users play back the data comprising a CD-I title from the emulator instead of a burned WORM (write-once-read-many) disk, reducing the need to press test disks.

OptImage this week will also announce a complete system for incorporating full-motion MPEG (Motion Picture Experts Group) video into CD-I titles. This includes a MediaMogul MPEG plug-in and two Mac applications.

One application, due this summer for an undetermined price, will compress audio according to the MPEG standard for use in CD-I products. The second program, which will ship this summer for less than \$1,000, will let users create encoding control lists for managing audio and video sequences.

OptImage Interactive Services Co. is at 1501 50th St., Suite 100, West Des Moines, Iowa 50266. Phone (515) 225-7000; fax (515) 225-0252. □

Fuji

From Page 24

in the United States by July. Although pricing has not yet been finalized, the company said it is aiming to offer the printer for about \$22,000.

The company said the device can output a full-color print in about two minutes; each additional copy takes about one minute, 10 seconds.

In contrast, Eastman Kodak Co.'s XLT 7720, which costs about \$25,000, takes about four minutes to print a 24-bit-color, 300-dpi letter-size page (see MacWEEK, June 8, 1992). The device prints CMY QuickDraw images to Kodak paper or transparency material measuring up to 8.27 by 11.69 inches. It is based on a proprietary engine and comes with SCSI and GPIB interfaces.

Fuji also offers the Pictography 2000, a \$25,000 printer that uses the

same printing process as the Pictography 3000 to output 284-dpi color images. It has a maximum image size of 7.2 by 9 inches; can output a letter-size page in two minutes, 30 seconds; and can print subsequent copies every one minute, 30 seconds.

Fuji Photo Film U.S.A. Inc. is at 555 Taxter Road, Elmsford, N.Y. 10523. Phone (914) 789-8100 or (800) 755-3854; fax (914) 682-4955. □

Cricket Draw

From Page 24

and the number of in-between steps.

"The bound text is definitely a neat feature," said Mike Lakowski, owner of In-House.dtp of Sacramento, Calif. "Now I can preview a bound-text object before I print, so I don't have to print 17 copies. Instead, I can see it and maybe print two copies."

Upgrades are \$69; users who pur-

chased the previous version after Feb. 28 can upgrade free. The company is also offering a \$129 trade-in to users of other high-end drawing programs, such as Adobe Illustrator, Aldus FreeHand and Deneba Software Inc.'s Canvas.

Computer Associates International Inc. is at 1 Computer Associates Plaza, Islandia, N.Y. 11788-7000. Phone (516) 342-5224; fax (516) 342-5329. □



Videolinx PTV users can overlay Mac text and graphics on live video. The external box outputs to NTSC devices such as televisions, camcorders and VCRs.

Videolinx pounces on Mac video and outputs it to NTSC devices

External box overlays graphics on live video

By Neil McManus

Los Gatos, Calif. — Videolinx Inc. this month introduced an external device that lets users overlay Mac text and graphics on live video.

Priced at \$795, Videolinx PTV intercepts Mac video and outputs it at a resolution of 640 by 480 pixels to both composite and S-video NTSC devices.

Videolinx PTV comes in two versions: An overscan model outputs Mac graphics with a black border; an underscan version fills the entire video screen.

The device offers genlock to synchronize its output with other video signals.

Users can superimpose Mac

graphics, text and animation over video by keying to black or any shade of blue.

Videolinx PTV includes a transcoder, allowing users to take in S-video signals and output them to composite devices.

A switch on the box lets users output full-frame graphics or limit them to one field to reduce flicker. The device also comes with controls for adjusting hue and black levels.

It includes PICT files of color bars and a blue-to-black test screen.

Videolinx is compatible with most eight- and 24-bit-color graphics boards, as well as the built-in video of the Mac LC, Quadra and Centris models. It is not compatible with the Mac IIfx or the internal video of the Mac IIfx.

Videolinx Inc. is at 987 University Ave., Los Gatos, Calif. 95030. Phone (408) 395-9593; fax (408) 395-9594. □

Island relieves imposition burden

Software can handle 128-page signatures

By Kirsten L. Parkinson

San Rafael, Calif. — Users looking for an easy way to paginate and impose documents electronically have a new option from Island Graphics Corp.

Island Imposition Publisher, which shipped last week, lets users arrange multiple pages of a document for correct binding and optimal use of plate or film space.

Imposition Publisher then prints the document onto a plate or single piece of film. The program is compatible with any PostScript output device.

Originally developed by Farrukh Systems Ltd. of Borehamwood, England, the application supports

signatures up to 128 pages and ships with 91 page-layout templates. Users can also create and save their own templates.

Two versions of Imposition Publisher are available. The \$2,195 Island Imposition Publisher Personal Professional includes input filters for Aldus PageMaker and PrePrint as well as QuarkXPress documents.

Island Imposition Publisher Studio Professional, which retails for \$3,995, comes with 13 input filters that support files from programs such as XPress, PageMaker, Ventura Software Inc.'s Ventura Publisher and Manhattan Graphics Inc.'s DesignStudio.

Island Graphics Corp. is at 4000 Civic Center Drive, San Rafael, Calif. 94903-4178. Phone (415) 491-1000 or (800) 255-4499; fax (415) 491-0402. □

**“I DON'T NEED (tick) YOUR
DATA (tick) PROTECTION SOFTWARE (tick).
I'VE HAD MY MAC (tick) FOR
YEARS AND (tick) IT
HASN'T CRASHED (tick) YET.”**

Not to alarm you or anything. But if a lot of wishful thinking is all that's standing between you and a Mac meltdown, you may want to check out a more proven method of protection.

We suggest the Norton Utilities for Macintosh v2.0. It both prevents data loss and gives you the most effective data recovery features available. In other words, it's like giving your computer its own personal bomb squad.



Without us, one crash can ruin your whole day.

For starters, let's talk prevention. The Norton Disk Doctor hunts down potential problems and lets you squash them before they become actual nightmares. Plus, Speed Disk defragments files and boosts performance of your hard disk, making data loss less likely in the first place. So far, so good.

Now, the recovery part. Our FileSaver feature keeps a record of vital disk information, which helps you rescue files if you happen to lose or delete them. On top of that, you get automatic backup. It's total security like this which has helped Norton Utilities become the best-selling data protection and recovery software in the world.



From Peter Norton, the leader in Macintosh utilities.

To learn more, dial FAST FAX 1-800-554-4403 and select option 1, document 411. (For information on easy network installation, choose option 1, document 481.) Better yet, pick up Norton Utilities at your local dealer for about \$149*.

You should probably do it today, though. Before your luck runs out.

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UTILITIES[®]
FOR MACINTOSH
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MultiSpin™ from NEC.

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The Refrigerator 1913



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der how you ever lived without them.

Built for the future.

All of our readers support Kodak's Multisession Photo CD™ technology, so you can view photographs stored

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All are SCSI 2 compatible, which increases compatibility across multiple platforms. And

In 1985 NEC redefined monitors with the invention of MultiSync® technology. Now there is MultiSpin. The technology that has redefined CD-ROM readers.

both the MultiSpin 74 and 84 have a 256 KB continuous flow cache that allows them to transfer encyclopedias of data at high speeds and play

back video without any pauses in motion. And the MultiSpin 38 gives you the power of portability. Best of all, the entire MultiSpin family comes with a two-year warranty.

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What's more, all of them are QuickTime™ compatible and meet the Multimedia PC (MPC) standards for Multimedia com-

puting. Once you check out the high-performance CD-ROM readers from the pioneers of



MultiSpin technology, you'll find everything else about as primitive as sending mail through the pony express. To find out more, call 1-800-NEC-INFO (in Canada 1-800-343-4418). Or, via fax, call NEC FastFacts™ at 1-800-366-0476, request 23766.



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News Analysis

Type industry at crossroads

The desktop
font
revolution
takes type to
the masses
and suppliers
to the next
level of
competition.

By Kathleen Tinkel

The invention of movable type about 1450 has been justly credited for enabling widespread literacy in the Western world. In the surprisingly coherent history of printing and typesetting, every uptick in technology has broadened the base not only of readers but from those responsible one way or another for setting words in type. Today's digital type is enabling another kind of literacy that we can call "communicator" literacy.

Desktop computers and PostScript have freed type of the physical and mechanical constraints imposed by older, proprietary typesetting systems. Type now is relatively easy to manufacture and duplicate, and to use it competently requires only relatively inexpensive equipment and no unusual skills. Today's diverse users and open-platform, off-the-shelf type libraries have created an entirely new fast-moving retail industry that has been strapped onto the old reliable trade business. As Kevin Wandryk, type business director of Mountain View, Calif.-based Adobe System Inc., put it, the type business "is coming out of the priesthood into the mainstream."

More people are setting words in type today; there are more individual typefaces in today's marketplace; and more people are making money designing, manufacturing, marketing and using type than at

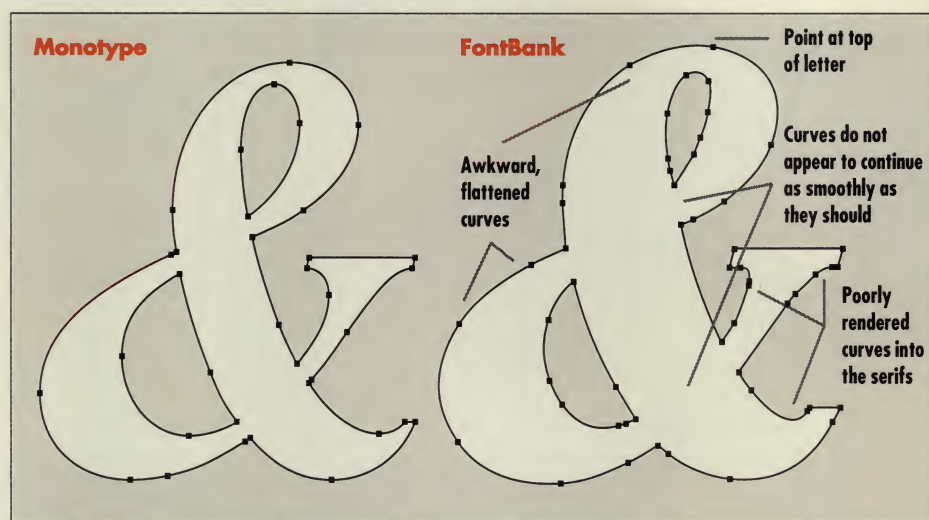
any time in history. All this profusion — of fonts, font technologies and new users — is producing great confusion in the marketplace as vendors readjust strategies to cope with a rapidly changing market.

The new titans of type. It's impossible to discuss the type industry today without mentioning Adobe, Apple and Microsoft Corp. — three companies that weren't in the type business a decade ago.

The type industry is dominated by Adobe, which licensed designs from International Typeface Corp. of New York and Linotype-Hell Co. of Hauppauge, N.Y., and produced the first PostScript Type 1 fonts in the mid-1980s. It also put "real" type in the first PostScript output device, Apple's LaserWriter printer.

We credit Adobe for the vitality of today's font industry. It licensed fonts rather than resorting to knock-offs, and PostScript is the foundation of the mass market for type. But Adobe also angered the type establishment by attempting to retain control of the Type 1 font format, thereby profiting while the old foundries were being forced reluctantly into the retail font market.

Adobe's library of more than 1,800 fonts accounts for the lion's share of the type used in the professional graphic arts marketplace. It's sold by Adobe as well as its cross-licensing partners: Agfa, a division of



The placement, type and number of points on these similar fonts — Times New Roman Bold Italic from Monotype and Times Roman Italic from FontBank — illustrate the differences between a font that appears to have been hand-digitized (left) and one that appears to have been auto-traced (right): Points must be placed at the extremes of curves to allow for effective hinting; the wrong kinds of points (corner vs. curve) result in awkward curves, and too many points can slow (or in extreme cases, stop) the RIP at output time.

Miles Corp. of Wilmington, Mass.; Monotype Typography Inc. of Chicago; Tegra/Varietyper Corp. of Hanover, N.J.; and Linotype-Hell. Because Adobe pioneered the marketing of desktop fonts to the mass market and had a strong educational program, it has also sold well to casual users — better than traditional type foundries such as Agfa (formerly Compugraphic Corp.), Linotype (formerly Mergenthaler Linotype), Monotype and Tegra/Varietyper, which were relatively unknown when they finally entered the desktop marketplace.

Apple and Microsoft. Apple backed into the type business by putting fonts into the first Mac and then went on to develop the TrueType format. Apple's new graphics-display technology, QuickDraw GX, scheduled for release as part of an operating system upgrade this year, has already attracted the interest of type designers and is likely to give Apple a boost in the type business (see story, next page).

By most accounts, Redmond, Wash.-based Microsoft is not a part of the type industry. It provided support for TrueType in

Windows 3.1, however, and sold thousands of copies of a 44-font TrueType package for \$49. Thus, Windows users on IBM PCs and compatibles had professional-quality type at prices Mac users couldn't approach. These fonts, which were not available for the Mac, have had a powerful downward effect on prices of fonts for both platforms. As one anonymous observer said, "Microsoft created the mass market for type and filled it, all in one fell swoop."

Microsoft started something: Dozens of companies now offer large, low-priced font collections for the PC and the Mac (see MacWEEK, Oct., 19, 1992). This week's mail alone brought offers of collections of 250 fonts for \$49, 200 fonts for \$89 and 129 fonts for \$79. The emphasis in every case is on the number of fonts offered and the low price. They're not all poor quality, either: In mid-March, Microsoft released a \$99 102-font TrueType package for the Mac consisting of the fonts it originally released for Windows.

Substance with style. Fonts are creatures of fashion. Like

Navigating the murky world of typographical law

Several categories of legal issues affect users, type designers and type vendors:

► **User licenses.** Fonts are licensed, not sold. Each company sets its own terms, but most licenses resemble those from Adobe Systems Inc., which licenses a font for a single output device. Discounts become advantageous for sites that have three or more printers. Both page creators and output services need separate licenses. The technically illegal practice of providing a font when sending a job for output or printing the job to disk with the font data included is widespread.

► **Design protection.** There is virtually no protection for original type designs in the United States. Copyright explicitly excludes letter shapes. Font software can be copyrighted, but the protection apparently doesn't extend to the data points that describe the letterforms (this has not yet been tested in court). A type designer or foundry can apply for a design patent, but the process takes years (perhaps even a decade), costs thousands and, after all that, may be unsuccessful. Typeface names are protected as trademarks, as long as their

owners defend them actively. None of these has proven effective in protecting designs, however, and knockoffs and no-name clones are widespread.

► **Subscriber licenses.** Font companies license fonts from International Typeface Corp. and, lately, from each other. The subscriber agrees to pay a royalty to the trademark holder on each font sale, which, in turn, may pay royalties to the designer.

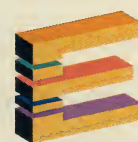
► **Monotype/ITC court decision.** In January a Seattle jury decided that Monotype Typography Inc. had not breached its license with ITC by creating a set of core fonts for Microsoft Windows 3.1 software. The fonts were designed to fit the way ITC fonts in PostScript laser printers fit, so users could transfer files from system to system without the risk of reformatting, and they bore a general resemblance to the ITC faces. At the time of this writing, ITC announced its intention to appeal the decision. ITC also announced that it will not renew Monotype's subscriber agreement when it comes up for renewal in May. — By Kathleen Tinkel

Metal type — around 1450

► Enabled widespread literacy in the Western world

► Fonts device-independent, type from any foundry could be used on any press

► Difficult or impossible to mix fonts from different foundries in single job



Linotype mechanizes typesetting — 1884

Monotype mechanizes typesetting — 1887

► Proprietary matrices locked typesetter into a single source of fonts

► Changed type from a product sold on merits to a sideline to help sell machinery

Phototypesetting — 1950

► End of use of multiple-size models

► Freed type from limitations of quantity

► Became less physically onerous

► Freed designers from having to produce multiple sizes



Digital typesetting — 1970

► Freed type from camera distortion inherent in phototypesetting

► More economical data storage

► Greater flexibility

wardrobes, type libraries require constant replenishment as x-heights are raised and lowered and line weights go from pleasantly plump to ultrathin. But designing typefaces, particularly extended text families, is an expensive project.

Fast-falling prices threaten type designers, foundries and resellers. Designers receive only a small portion of the selling price of a font. Faced with lowered revenues, the foundries said they will not be able to pay royalties to designers or invest in development of new typefaces. Several foundries have reduced or consolidated their design departments and are licensing more typefaces from independent designers. Adobe, for example, restructured last fall, laying off 24 employees, half of them in the type division.

Another threat to profitability is user piracy. Font industry trade association A Typ I (Association Typographique Internationale) has mounted a "font software anti-piracy initiative." The association and its members, including ITC, Adobe and other foundries, have promised to teach users about their responsibilities under user license agreements, as well as prosecute violators in the courts.

According to Cynthia Hollandsworth, American delegate for A Typ I, the anti-piracy initiative has already brought many large customers to the foundries to legitimize their font libraries.

At a seminar last October called "Whose Font Is It, Anyway?" sponsored by the Type Directors Club in New York, a panel and audience of type industry representatives, independent graphic designers, production managers, service bureau operators and other interested parties exposed a number of conflicting points of view on font licensing, pricing and piracy — issues that seem interwoven in the minds of users. More than anything, the meeting illustrated the extent to which the traditional font producers and the new breed of

Hints, outlines, masters and more: Fonts' electronic skeletons

Both PostScript Type 1 and TrueType fonts are digital outline formats, based on different mathematical equations. In terms of outline quality, they're roughly comparable; in fact, a large character in the two formats produced by the same foundry printed on the same printer should be visually identical. The formats vary primarily in the type and power of their hints — computer code or instructions built into fonts to make the characters look better under adverse conditions.

► **Type 1.** Hints in this format adjust stem weight, x-height and starting position for type characters as they are fitted to theoretical grids of pixels for the computer monitor or output device. When the characters become large enough (about 14 points for many faces) or the resolution fine enough (600 dpi or above) to provide the thousands of points necessary to show the character accurately, the hints no longer have an effect.

► **TrueType.** In theory, TrueType has an edge when it comes to hints — the instruc-

tions are more extensive and more powerful. They can be used to affect the way type looks at any resolution or size, not just at small sizes and low resolutions. However, TrueType hinting is hard work, and none of the currently available commercial font-rendering programs eases the process. TrueType is beginning to catch on among business users of the Mac, but not at all among graphic arts professionals.

► **Multiple masters.** Adobe recently added multiple masters as an extension to Type 1 fonts. It can be used to add weights and widths to a type family or overcome visual deficiencies caused by using a single outline for type at a large range of sizes. The new subformat hasn't yet been widely accepted, possibly because there are few multiple-master fonts on the market, and they are both relatively expensive and difficult to use. The new format awaits better support from the Mac's operating system and applications (especially typesetting programs such as Aldus PageMaker and

QuarkXPress). The multiple-master technology also is used to create substitute fonts, one of the cornerstones of Adobe's document-interchange program, Acrobat, which should be released this year.

► **QuickDraw GX.** The next advance in type history, technologically speaking, will probably be made when Apple begins to release QuickDraw GX later this year as part of its new modular operating system. This is expected to overcome many of the Mac's limitations as a typesetting front end: It will provide access to thousands of glyphs (individual characters) instead of 228; unlimited numbers of weights and styles per font family instead of the four weights and styles we have now; built-in kerning and tracking tables; and contextual character substitution to make it easier to use "expert" characters, such as ligatures and fractions. To take advantage of QuickDraw GX's extended features, both fonts and applications will have to be updated, so the full benefit of the new operating system software will probably take a couple of years to arrive. — By Kathleen Tinkel

users fail to see eye to eye.

The foundries, ITC and A Typ I, although not entirely unified, said they cannot afford to have font prices go much lower and that users must abide by the one-font, one-printer license. On the other side of the issue are designers — many of them now reluctant typesetters — and service bureau operators.

They protest on pragmatic grounds: type costs too much and, regardless of licensing agreements, fonts need to accompany jobs to the service bureau for output.

"If there's any one real threat to the industry, it's companies that simply take the [font] design and change the name," said Mark Solsburg, president of font reseller FontHaus Inc. of Norwalk, Conn.

Chuck Bigelow of Menlo Park, Calif.-based Bigelow & Holmes (which produced 22 of the 44 faces in Microsoft's first TrueType font package), pointed out that "it's a million times cheaper to plagiarize a font today than it was 30

years ago. To copy a [font] in a complete range of sizes of roman and bold cost about a quarter million dollars in 1962. Today you could steal those two faces on a diskette for about 25 cents."

Confusion nibbles at the market. There are thousands of fonts, most of them variations of the same few hundred faces. Customers often choose a font on the basis of variety, price, support or need for fast delivery, especially since many cannot tell one font from another without the label. Manufacturers add to the confusion by assembling an array of products at different price points from a single type library.

The market is divided. First, there are graphic designers who set most of the type but are more likely to buy fonts for a particular project than to invest in building a type library. On the other hand, there are PostScript service bureaus that may have an extended library if

they have a demanding ad agency clientele or got a good buy when they bought an imagesetter. However, service bureaus may also buy fonts as needed or simply ask customers to supply fonts with jobs.

Font users fall into three loose categories: graphics professionals, corporate document producers and other business people, and casual desktop publishers. Of these, only a few in the first group are accustomed to the notion of investing in a typeface library. For the others, fonts are a commodity — something that spices their work or entertains them, but not an essential component.

Graphics professionals use PostScript Type 1 fonts, most likely manufactured by Adobe. Other customers, especially those who rely on laser printers for final output, are more likely to prefer "value-priced" selections, such as the sets available from Adobe and other mainstream foundries.

See Fonts, next page

ITC founded — 1970

- Supported new industry of independent type designers by paying royalties and publicizing their work
- Re-established notion of device-independence, paving way for desktop typesetting

Storch court case — late 1970s

- Anyone can legally make a literal copy of any typeface
- Only trademarks (names) are protected



Adobe introduces PostScript language and Type 1 format — 1985

- Fonts again device-independent.
- Adobe licensed typefaces from ITC and Linotype and put them into the ROM of the first PostScript output devices
- Today's type industry was born
- Type 1 font specification kept proprietary

Adobe releases Type 1 specification — spring 1989

- Licensed Type 1 font-creation tools to Monotype, Linotype, Agfa and Varityper
- Permitted developers of font-creation software and type foundries to produce Type 1-compatible products without licensing expensive technology from Adobe



Apple and Microsoft join to develop TrueType format — fall 1989



TrueType ships with System 7 — May 1991

Adobe extends Type 1 with support for multiple-master fonts — 1991

- Not yet widely accepted —
- Relatively expensive and difficult to use

Microsoft releases Windows 3.1 with TrueType — mid-1992

- Support for TrueType grows
- TrueType fonts available on Mac and Windows platforms

Font prices plunge — 1992

- Absence of copyright protection spurs creation of many auto-traced knockoffs or clones of licensed faces
- Prices range from 50 cents to a few dollars per font



Apple to release QuickDraw GX — late 1993?

- Expected to overcome many of the Mac's limitations as a typesetting front end

Fonts

From previous page

Casual type buyers are most likely to buy a large collection of miscellaneous knockoff TrueType fonts.

This layering of the marketplace seems likely to continue for the foreseeable future. According to Ira Mirochnick, head of U.S. operations for Monotype, "To be successful today, you have to address all these markets individually." This strategy is likely to mean

selling the same typeface in different packages at a wide range of prices.

Other issues. Because copyright does not apply to typeface designs, the only evidence that a manufacturer has licensed the design from its source is by use of the trademarked name. It is legal to copy a type design by tracing scanned-in character outlines and, in fact, this is the source of many of the large inexpensive font collections. Another source

is URW of Nashua, N.H., which digitized many faces and can license the outlines (but not the trademarks, which it does not own).

Adding to the confusion is the fact that there are few unmistakable indicators of font quality. Although some knockoffs meet professional standards, most are likely to be poorly made: the clone makers don't have access to good original artwork and are likely to automate much of the production, which is less reliable than the slower hand-tuning

done by mainstream manufacturers. On the other hand, even though it returns no royalty to the designer or originating foundry, a knockoff can be well-made.

Lurking in the sidelines are products designed to automate font creation. Incubator from Type Solutions Inc. of Plaistow, N.H., enables users to change typeface characteristics and generate new fonts; and a new program called FontChameleon, expected this summer from Ares Software Corp. of Foster City, Calif., will permit users to create new fonts on the fly.

Type designers, foundries and others with an investment in type trademarks promote the idea that seeking out licensed fonts is "the right thing to do," suggesting that the decision is a question of ethics. Some buyers in the graphic arts field said they're careful not to buy knockoffs of typefaces designed by living designers, but on the whole this position has not been adopted by the great mass of type users.

Font marketers, such as FontHaus; Font-Shop of Toronto; and Precision Type Inc. of Commack, N.Y., that represent many font manufacturers and sell primarily to ad agencies and graphic designers, can be a good source of guidance on which fonts to buy.

The bottom line. The type industry is clearly at what Adobe's Wandryk calls a crossroads. The foundries compete with each other and low-priced knockoff houses, all of them offering apparently identical type libraries. With few infallible indicators of quality, users often seem unable to distinguish well-made from shoddy fonts.

Critics suggest that if the established foundries are too large and bureaucratic to compete in the new type marketplace, they deserve to fail. The new breed of type merchant claims that the font establishment is greedy, taking unwarranted profits from an investment that was paid off decades, if not centuries, ago. New type designs, they said, will arise from the many newly empowered users wielding desktop font-creation tools. In other words, they ask, "Who needs you guys?"

"Users need us," the mainstream companies say. They point to typographic tradition and their long-term investment in type libraries, attention to detail, and ability to create and market new designs as reasons. They have shown a commitment to all segments of the marketplace and believe they are most likely to satisfy its needs in the future.

"Fonts are too cheap," said Frank Romano, former editor and publisher of trade publication TypeWorld and now professor of graphic arts at the Rochester (N.Y.) Institute of Technology. Most users would disagree, probably — it's hard to resist the appeal of low prices.

It's reasonable to worry about the future of the type industry in the next year or two, in which one or more of the major foundries may succumb to falling prices and a marketplace flooded with ultrainexpensive fonts. It's even conceivable that the historic type libraries are all but dead, drowned in a sea of indifferent knockoffs. However, there seems to be no way to alter the course the type industry is taking.

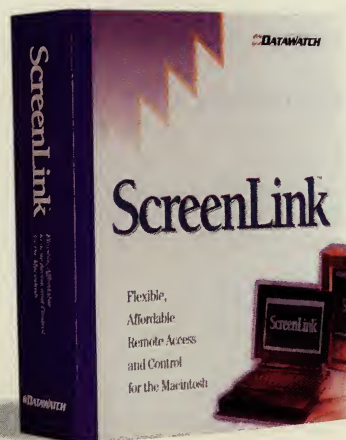
Users can console themselves with profuse variety and lower font prices for now, however, while they wait for something — possibly new technology such as QuickDraw GX — to spark development of new, more capable fonts. In the end, type will endure. □

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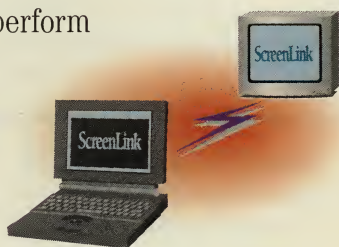


Affordable

ScreenLink is the most affordable remote access and control available for the Macintosh. The Twin-PAK includes two copies of ScreenLink, one for each end of the Mac-to-Mac connection. The Zone-PAK lets you use ScreenLink on an *unlimited* number of Macs in a single AppleTalk zone.

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Server Sentry

AppleShare 3.0

Remote Management.

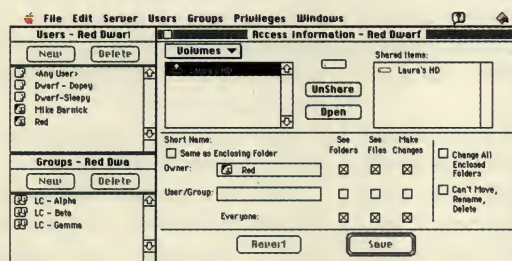
Server Sentry is the first and only Apple Events interface package to allow complete server management. Server Sentry can be used to remotely: control access to the server, get server log/statistics, provide alarms if problems occur, copy/manage users & groups between multiple servers, remotely launch/quit applications, remotely shutdown the server, and much more. All of these tasks are done from an interface which is identical to the familiar AppleShare 3.0 Admin. interface.

Use all AppleShare 3.0 Admin. features remotely.

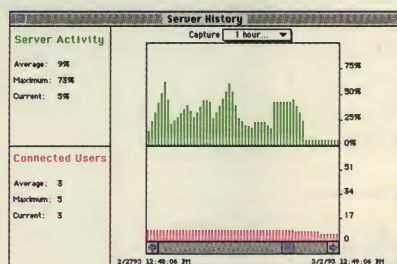
Auto Disconnect Users.

Guest to Macintosh Name Mapping.

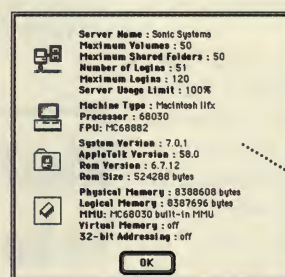
Time/User based Access Restriction to Server.



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Server Alarms can be sent to Pager, Screen & Log.

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Smart Copy allows folders to be copied across servers while maintaining ownership and access privileges.

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Remotely Manage Server(s)	✓	
Guest to name Mapping	✓	
Time/User based Access Restriction to Server	✓	
Server Alarms	✓	
InterServer Management	✓	
Smart Copy	✓	
Auto Disconnect Users	✓	

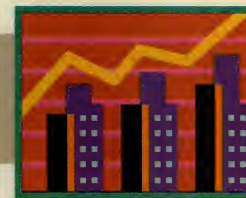
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BUSINESS WATCH

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Two big sites stop Mac purchases

Westinghouse, Boeing switch to IBM clones

By Jon Swartz

San Francisco — Two of the nation's largest Mac installations have decided to stop buying Macs.

Officials at Westinghouse Savannah River Co. and Boeing Co. have issued internal company memos that call for the discontinuation and — in some cases — the elimination of Macs. In all, some 30,000 Macs could be affected by the decisions.

► **Westinghouse Savannah River** officials last week confirmed the Department of Energy contractor will "immediately suspend any acquisition or procurement" of Macs.

An Energy Department spokesman who works at the site said about 7,200 Macs, or about half the computers, at the North Augusta, S.C., site will eventually be replaced by IBM PCs and compatibles. "We want a single platform at the site to simplify service and support issues," he said. "IBM is that solution."

Westinghouse officials have scheduled a meeting this week to further coordinate their Mac plans, according to an internal memo.

The Savannah River site, which develops materials for nuclear weapons as well as waste management and environmental restoration tech-

No more Macs

COMPANY	REASON FOR SUSPENDING PURCHASES
Westinghouse Savannah River Co.	Converting to IBM PC and compatibles as companywide standard
Boeing Co.	Dropping proprietary graphic interface in favor of X Window and Unix

nology, ranked sixth on the MacWEEK 200 list of largest commercial and government sites last year (see MacWEEK, May 25, 1992).

► **Boeing** sources said the Seattle-based company last year quietly started a five-year plan to replace as many as 20,000 installed Macs with X Window and Unix machines by 1997.

Considered one of the most visible Apple customers in the world, Boeing made its decision to erase Macs because they represent a "proprietary interface technology," according to an internal memo written several months ago.

The company, which ranked fifth on last year's MacWEEK 200, is reportedly considering Hewlett-Packard workstations, sources said. Walter Braithwaite, Boeing vice

See *Buying*, Page 36

Windows, Mac apps pace growth

By Lisa Picarille

Washington — Bolstered by the continuing Windows boom and steady growth in the Mac market, North American personal computer software revenues rose 14 percent to \$5.75 billion last year, according to the Software Publishers Association.

Windows applications sales skyrocketed 96 percent to \$1.93 billion, up from \$989 million in 1991. Windows software made up 34 percent of total U.S. software revenues in 1992.

Meanwhile, Mac applications topped \$990 million, a 20 percent increase from \$824 million in 1991. Fourth-quarter Mac software sales rose 16 percent to \$277 million. Mac applications totaled 17 percent of U.S. software sales last year.

Despite a predictable 13 percent dip in sales, DOS-based applications still accounted for more than 45 percent, or \$2.58 billion, of North American software revenues.

Word processors and spread-

sheets remained the top-selling applications, but price cutting in both categories limited their revenue growth, according to the SPA, based here.

Overall, word processor sales grew 2 percent to \$829.5 million last year. Mac word processors accounted for \$144.3 million, up 56 percent from \$92.5 million in 1991.

Despite an overall increase of 8 percent in spreadsheet sales, revenues for the Mac side of the spreadsheet market slipped 5 percent to \$92.5 million, compared with \$97.8 million in 1991.

The fastest-growing Mac software category was integrated software, which jumped 93 percent to \$47.6 million last year, compared with \$24.7 million in 1991.

Several other Mac software categories experienced significant growth from 1991 to 1992: home education, 64 percent; utilities, 46 percent; presentation graphics, 40 percent; and finance, 31 percent. □

Windows leads apps increase

PLATFORM	1991	1992	% CHANGE
DOS	\$2.96 billion	\$2.58 billion	-15
Windows	\$989 million	\$1.93 billion	96
Mac	\$824 million	\$990 million	20
Total	\$5.04 billion	\$5.75 billion	14

Source: Software Publishers Association.

MacFriends duo to be sentenced

By Mitzi Waltz

Portland, Ore. — Steven Folkestad and James Epler, former owners of the MacFriends retail store and mail-order business here, pleaded guilty this month to laundering \$26,250 in drug money during the late 1980s.

The money, which was channeled through Creative Cellular, Folkestad's now-defunct cellular-phone company, came from convicted cocaine dealer Robert Rossi.

Rossi, who is currently in federal prison on drug-trafficking charges, gave cash to Creative Cellular. About three-fourths of the money was then given back to Rossi in the form of "pay checks," making it appear as though he had a legitimate source of income. Folkestad kept the remaining cash. The case was instigated by an Internal Revenue Service probe in 1990.

See *MacFriends*, Page 36

Apple inks deal for DEC to sell PBs, IIVx, Quadras and Centris

By Bruce Wright

Campbell, Calif. — Apple and Digital Equipment Corp. last week announced an agreement that allows DEC to sell Apple products directly to large corporate sites.

Under the plan, DEC will offer PowerBook, Mac IIVx, Quadra and Centris models to Fortune 500 accounts.

In addition, DEC will carry Apple peripherals such as printers, hard drives and CD-ROMs.

The co-selling arrangement also gives Apple the option of offering DEC servers, minicomputers and mainframe computers to corporate buyers who are considering Macs as their desktop machines.

Apple and DEC already have a similar agreement in Europe.

"This new program will accommodate increasingly complex customer acquisition and support

requirements," Apple USA President Bob Puette said in a prepared statement.

A DEC official said the Maynard, Mass.-based company will expand its customer service and support to handle Apple products. He said the contract should boost Mac-to-VAX sales.

The increased support includes consulting, systems integration and support for Apple's VITAL architecture. Developed with DEC, VITAL is Apple's strategy and architecture for integrating current and future desktop computers with minicomputer and mainframe systems.

DEC's customer service will also work with Apple's Technical Assistance Center to support DEC solutions that include Apple products. Field sales and support staff will undergo training for Apple products, according to the companies. □

Stock Watch

03.24.93 CLOSE WEEKLY % CHANGE

Apple	53.75	-2.49
Dow Jones average	3445.38	0.54
SOFTWARE DEVELOPERS		
Adobe	43.13	-1.43
Aldus	17.00	-9.93
Caere	13.25	-10.17
CE Software	3.38	0.00
Microsoft	86.25	1.02
Novell	32.88	-1.13
Symantec	12.00	0.00

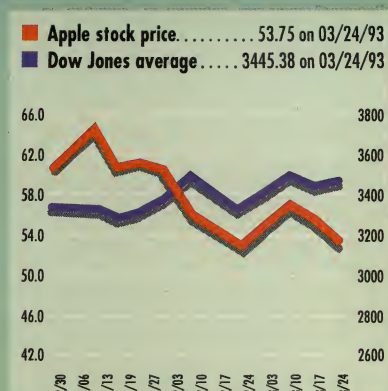
PERIPHERALS VENDORS		
CMS	2.38	0.00
HP	72.75	-4.12
Mass Micro	0.44	-12.50
QMS	14.38	-2.54
Radius	3.88	-18.42
RasterOps	7.00	-3.45
Sigma	5.75	-2.13
SuperMac	13.75	-12.70

STORAGE		
Conner	15.63	-7.41
Maxtor	8.38	-4.29
Quantum	12.88	-3.74
Seagate	14.63	-8.59
SyQuest	12.25	6.52

INDUSTRY INDICATORS		
DEC	42.13	-8.17
IBM	51.13	-5.98
Motorola	64.13	0.20
Sun	28.13	-8.91
Dow Jones	3445.38	0.54

Compiled by Nordby International Inc.

Most computer-related stocks were down slightly last week, as software developers, peripherals makers, storage companies and computer makers all experienced modest declines.



Computer stocks, including DEC, decline



Digital Equipment Corp.'s stock fell 8 percent to \$42.13 per share, Radius Inc.'s stock decreased 18 percent to \$3.88, and Caere Corp.'s stock slid 10 percent to \$13.25.

In a new, independent test, the 24-bit color graphics card most people think of as fastest, wasn't.

Ingram Laboratories ran a Hydra QuickDraw™ performance test and found Radius' PrecisionColor 24X™ was 16% faster overall than the Thunder/24™.

That's surprising, especially since the makers of Thunder/24 want you to pay \$1,250 more for their card.

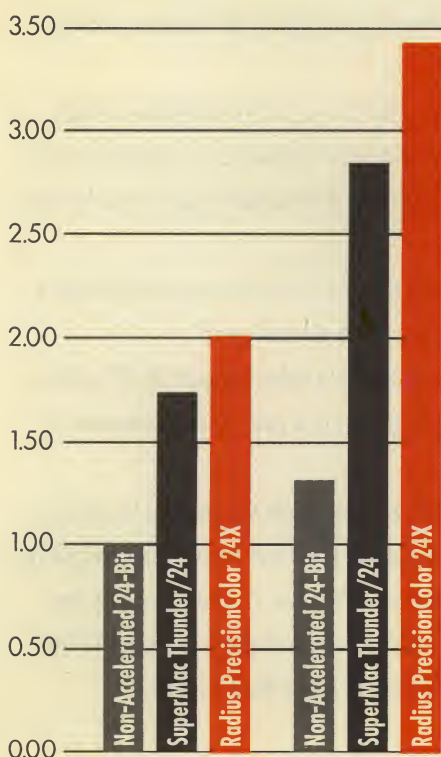
PrecisionColor 24X isn't just faster and less expensive. It's also available in 7" and 9" versions.

So it will fit in all of Apple's newly-announced systems, as well as current models.

No wonder MacUser rated PrecisionColor 24X "Best Price/Performance." And both MacWorld and Byte named it their "Readers' Choice."

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Get PrecisionColor 24X. Lightning fast performance. Priced to strike you right.



CD-ROM system ups Euro software options

Discs offer 200 apps in encrypted form

By Ian G. Jacobs

London — In an attempt to cash in on both a relative dearth of Mac software in Europe and a growing number of software-distribution methods using encryption technology, Instant Access International is setting up a new system.

The company offers a yearly subscription that costs \$74.50 and includes at least four CD-ROMs filled with encrypted software demos.

Users can buy a program through an Enablement Centre and pay with either a credit card or a corporate account. The Enablement Centre then gives the caller a special registration number that unlocks the encryption code and turns the program into a full, working copy.

Subscription offers have been placed in many of England's computer magazines, as well as on bulletin board systems.

The first CD-ROM ships this week, and an Enablement Centre is

open in London to take calls. Users throughout Europe can call local numbers that connect to the London number through link lines. Instant Access plans to have another payment number opened in Australia by early May.

The first CD-ROM has about 200 programs, including Apple's AppleShare (which costs about \$1,190), Symantec Corp.'s Norton Utilities and The Voyager Company's Voyager Books. The company will also offer Apple CD-ROM drives.

Instant Access said it hopes to lure several of the large number of developers who produce software

that is unavailable in Europe. There is no limit on the size, type or price of software that Instant Access can encrypt and include on future discs.

Instant Access' terms for developers include:

- ▶ No setup charges.
- ▶ Monthly reports of all sales and payment by wire transfer.
- ▶ Payment of wholesale prices, set by the developer, for each piece of software sold.

Instant Access International is at The Access Centre, Colindeep Lane, London, England NW9 6DU. Phone 011 44 81 200-2596; fax 011 44 81 200-9882. □

Oracle posts 28 percent sales increase

By Ian G. Jacobs

Redwood Shores, Calif. — On the strength of strong increases in Unix licensing of its database software, Oracle Corp. posted a 28 percent increase in third-quarter sales.

For the quarter ended Feb. 28, Oracle registered \$370 million in sales, compared with \$289.6 million in the same quarter a year ago.

Profits rose almost 80 percent to \$29.2 million, up from \$16.8 million last year.

The results include a one-time charge of \$24 million to settle a class-action suit by stockholders. Company shareholders sued the Redwood Shores, Calif.-based company in March 1990 because Oracle stock fell after company officials said earnings would be below expectations.

The strong quarter continues a gradual rebound at Oracle, which faltered in 1990 and 1991. Industry observers said the company's recent financial growth is a result of trimmed operating costs and the resolution of internal control problems.

The results were released after the market closed last week. In over-the-counter trading, Oracle shares were unchanged at \$34.88 per share. In the fall, the stock was trading as low as \$16. □

Buying

From Page 34

president of information technology, did not return phone calls.

For Apple, which has had to increasingly contend with other computer makers for shrinking defense contracts, the loss of any government-related deal — particularly two of its largest — is a serious blow, according to industry observers.

Half of the 10 biggest MacWEEK 200 sites and more than one-third of all the sites on last year's MacWEEK 200 list are in the aerospace and defense industries, including research labs, private industry and government agencies. Besides Macs, these companies have huge investments in super-

computing technology, high-speed networks and telecommunications.

"There has to be something about the Mac that does not meet the five-year computer plans of some of these companies," said Pieter Hartsook, editor of The Hartsook Letter in Alameda, Calif. "It may be the lack of full support for the OSF's (Open Software Foundation's) Distributed Computing Environment. But I wonder if that's a wise decision with PowerPC, PowerOpen and VITAL available in 1994."

An Apple spokeswoman downplayed the Westinghouse and Boeing decisions, adding that neither company had a product contract with Apple. □

MacFriends

From Page 34

Folkestad and Epler will remain free until their sentencing, which is scheduled for June 1. Because the men pleaded guilty to only one transaction in October 1987, they were able to avoid being sentenced under the stricter federal guidelines that are now in place. They still face penalties of up to 20 years in jail, but a pending plea bargain will probably reduce their sentences to six months' imprisonment.

Folkestad's and Epler's legal representatives refused to comment.

Meanwhile, MacFriends was sold to an unidentified public company

in November 1992. "MacFriends is no longer owned by the two gentlemen that are in question," said Henry Collin. "I am the new general manager, hired by the new owners." Collin declined to identify the company's new owners and investors.

"Steve and I have agreed to stay on for three years," Epler said in an interview. "The company will be much stronger than it was, and we plan to go forward [with] another round of public financing in June." He said the new owners intend to focus on the mail-order market, adding that no name change is planned. □



Business

BRIEFS

Cayman cuts work force 15 percent

Cambridge, Mass. — Cayman Systems Inc., citing soft sales of LocalTalk-to-Ethernet routers, this month laid off 20 employees, or about 15 percent of its work force.

A company spokeswoman said the reduction was spread across all departments, including engineering, administration, sales and marketing.

Company President Ted Stabler said a 30 percent to 50 percent decline in the Ethernet router market since 1991 forced the company to lay off workers for the first time in its six-year history. He said Cayman is developing both Apple and non-Apple internetworking products to boost sales.

Apple is now No. 2 in Japanese PC market

Tokyo — Its operating system isn't the only thing Apple is translating into Japanese. The company is finding its market success traveling overseas as well.

According to International Data Corp. of Framingham, Mass., Apple Japan is now the second-ranked personal computer vendor in Japan with a unit market share of 8.8 percent, placing it behind only NEC Corp. of Tokyo.

Apple Japan's market share for the 1992 fiscal year represented a 2.8 percent increase over the previous year.

For fiscal year 1992, Apple Japan's sales topped \$500 million. Apple Pacific, of which Apple Japan is a part, is the company's fastest-growing region.

IDC credited Apple Japan's success to its strategy of localizing its products for the Japanese market. Last fall Apple released Kanji-Talk 7, the first Japanese version of System 7. The company has also worked with third-party software developers to increase the number of Mac applications here to more than 1,000.

Tektronix's sales drop in Q3, but profits soar

Wilsonville, Ore. — Tektronix Inc. this month reported a drop in third-quarter sales, but still it was enough for the company to register a profit after a loss a year ago.

The peripherals maker said sales for the period ended Feb. 27 were \$311.2 million, compared with \$394.8 million in the same quarter last year. Profits, however, were \$9.1 million — a vast improvement over a \$2.9 million loss last year.

A Tektronix spokeswoman credited the financial turnaround to downsizing and an increase in graphics sales. Last year the company's earnings were hampered by a \$17.3 million restructuring charge.

At the end of the quarter, Tektronix employed 10,191 people, down from 11,464 a year ago.

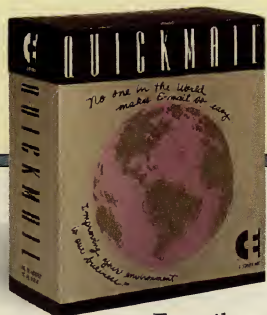
MacWEEK index COMPUTER LOSSES

Personal computer losses surpassed \$1.35 billion in the United States last year because of thefts, power surges and other factors, according to Safeware, The Insurance Agency Inc.

CAUSE	LOSS (ESTIMATED)
Theft	\$882.4 million
Power surge	\$174.2 million
Fire	\$119.2 million
Natural disasters	\$114.5 million
Other	\$104.5 million
Total	\$1.395 billion

Source: Safeware, The Insurance Agency Inc.

TOPPLE THE ADMINISTRATION



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EDITORIAL

Paying attention to the customer

As a minority player in the microcomputer business, Apple can survive only by offering something special — innovative products that add up to a distinct computing experience. The company seems well aware of that principle in designing its software and hardware, but the same can't be said of its approach to customer relations.

Instead of setting standards for the rest of the industry to follow, Apple has tended to hover in the middle of the pack, at best, on issues of service and support. Aside from a few bright spots, such as the PowerBook repair hot line, the company seems to move forward only grudgingly, in the face of competition, on issues such as warranties.

Post-sales communications is an area of particular concern. Apple does virtually nothing to alert customers to bugs in its software, the release of maintenance updates, the existence of repair or replacement programs for defective hardware, or even upgrade opportunities. Even customers who dutifully fill out their CPU registration cards

get nothing in return, except perhaps a mug or mouse pad and now a mail-order catalog.

Traditionally, Apple has referred users to resellers on such matters. That was a weak reed even when the dealer channel was healthy; today, in the age of superstores and consumer outlets, it's just a bad joke.

It's not hard to think of ways to improve the situation. Anyone who registers an Apple product should get a postcard, or if they prefer, an electronic message about any news pertaining to that product, such as an upgrade path; a warranty-extension program; or updates to drivers, enablers or other key software. Whatever else the company does to AppleLink, it should simplify it, offer a low-cost basic-service option and bundle client software with all Macs so users can find information, report problems and pose questions about their systems. And the company should have an official presence on all other major on-line services.

Yes, such measures would cost money, but they'd more than pay for themselves in good will and customer loyalty. □

Commentary

Pentium, Windows don't mean an end to the PowerPC

As Intel Corp. finally releases the Pentium chip, several questions arise regarding its effect on the industry. Will the Pentium trigger yet another wave of sales, as the 486 did; how will it fare against RISC competitors; and, of course, what about its impact on Apple?

If hindsight brings clarity, it is often at the cost of erasing pesky details marring an otherwise beautiful picture. For instance, no one predicted 1992 would be a year of dramatic expansion in the PC-clone business. The go-go years were gone, said conventional wisdom.

Actually, the only gone things are the go-go profits; sales of 386- and 486-based systems continue to grow at a healthy pace. This is a result of across-the-board price compression. In 1991, you could buy a no-name 486 system for one-third the price of a roughly equivalent Compaq PC. Now the price delta is only 25 percent.

And, of course, all this newfangled hardware got fresh software to give it additional allure.

When Pentium aligns with NT. This conjunction of good software with plummeting prices is unlikely to repeat itself this year or in 1994. There are no more gross price differences to play with. We are now in a war of attrition, where the midsize players are likely to be squeezed between the Compaqs and the no-name clones.

Second, Windows NT isn't Windows 3.2; it is much bigger and hairier than a mere new revision. Although it is well-supported by developers, it will require relatively expensive hardware to run, thus delaying broad acceptance.

Third, the Pentium chip will require new versions of software to fully exploit its capabilities. For example, the new chip can start executing several instructions at the same clock tick. Sounds good, until one realizes new compilers, new compilations and even modifications of existing software may be required.

Still, "slow" market penetration can mean big business: Assume 5 percent of 40 million PCs in 1994 — that's 2 million chips. At \$1,000 each, it's \$2 billion; at \$500, it's a mere billion.

The pit and the PowerPC. The combination of Windows NT and Pentium-based clones competing with "proper" but more-expensive workstations produces another set of planets lining up.

This conjunction limits Apple's capabili-

ty to penetrate any of the workstation business, but that was never really part of the plan, no matter who said what and when.

Of course, the migration to the PowerPC architecture will take more skill and effort than migrating to Windows NT and the Pentium. But the results can be nicer, too. Even if critics pick at the IBM architecture for not being "pure" RISC, everyone agrees it is a respectable one. And rumors have it the new RISC PCs built on it look really good.

We also have the matter of software. Success requires more than a compatible, high-performance port of the existing software platform. Under the smooth appearance of the Mac's user interface lies an ingenious but aging foundation whose complexity bedevils developers — and many Apple engineers.

If Apple manages the feat of moving to a new instruction set and building a new foundation, not only will the unprecedented performance earn it respect, it will keep its existing customers coming.

This is nice, but it doesn't seem to be taking anything away from anyone else. A fine behavior in the schoolyard, but not in the market against Intel and Microsoft. □



JEAN-LOUIS GASSÉE

LETTERS



Integrated category booming, and Microsoft claims share

The integrated-software category is growing at a tremendous pace, demonstrating that the consumer sees real benefit in using this type of software. Unfortunately, recent stories in the press about products in this category have quoted erroneous figures for sales in the integrated-software category for the Mac. We believe it is our obligation to correct these inaccuracies.

Sources have been quoted claiming that ClarisWorks has captured 60 percent or even 70 percent of the Mac integrated market. Claris Corp. itself announced that it shipped more than 400,000 units in the 14-month period between November 1991 and December 1992.

There are several underlying inaccuracies in this information, however. For example, Bill Kesselring of San Jose, Calif.-based Dataquest Inc. calculated that in 1992 Claris shipped 412,000 copies of ClarisWorks, and Microsoft Corp. shipped 198,000 copies of Microsoft Works. The problem with this data is that it compares dissimilar numbers. The ClarisWorks figures include licenses to Apple for OEM sales on the Performa, as well as licenses to education sites. The Microsoft numbers, on the other hand, count sales of actual packages sold. In other words, a sale of one 500-pack was counted as one rather than 500!

Dataquest is not to blame here. It merely asked a seemingly innocuous question — How many units did you ship last year? — and got different responses. If compared fairly, Microsoft Works would not have had only 30 percent of the market in 1992. In fact, Microsoft Works for the Mac 3.0, which shipped in late September 1992, licensed nearly 300,000 copies in the first three months of its availability.

Inaccuracies aside, these stories seem to miss the most important aspect of what this information really conveys — that the integrated category is experiencing tremendous growth. Microsoft Works is selling more copies than it ever has before, but so are a number of very good competitors. The net result, of course, is more competition, more innovation and better products for consumers.

Dennis Tevlin

Product manager, Microsoft Works for the Macintosh, Microsoft Corp., Redmond, Wash.

SuperCard rates best-of-class and deserves better support

Recent issues of MacWEEK have contained stories and letters about the future of Aldus Corp.'s SuperCard and Apple's HyperCard. After creating presentations, user interfaces and programs using HyperCard, SuperCard and Asymetrix Corp.'s ToolBook, I have to cast my vote for SuperCard. These products look very similar, but in daily use SuperCard is the most powerful and easiest to use.

SuperCard and external commands (XCMDs) created in Think C cover most of the programming problems faced in small- to medium-size Mac projects. Even if one must write the entire application in Think C, SuperCard provides a quick and flexible means to lay out the application and demonstrate it to potential users.

Although Aldus does a lot of things right, it has not done a good job of promoting SuperCard. I understand that SuperCard does not fit into the product mix that Aldus has chosen. It is a real shame that such a useful tool is left languishing.

I hope SuperCard will be bought by a company willing and able to dedicate itself to developing and supporting SuperCard enthusiastically across a variety of application areas. I don't know what the customer base is at the moment, but with proper care and feeding, it could become very large. SuperCard is a product that everyone can use to get real work done, and they should be given a chance to buy it and use it.

*Mark Martino, software developer
Redmond, Wash.*

Centris 610 design shortcuts leave business user short

Some of the design choices made on the Centris 610 were ill-advised. I'm not talking about big things (performance-wise, the 610 is a great value). I'm talking about the kind of petty annoyances that you just don't expect to find in a Mac aimed at the serious business user. Specifically:

- ▶ No keyboard start-up or soft shutdown. On the Centris 610, you must physically turn the computer on and off. In addition to being annoying, this prevents the use of macros that automatically shut down the computer after completing lengthy tasks.

- ▶ Hidden keyboard reset. Computers crash. The keyboard reset provided an easy way to restart. The Centris 610 hides a tiny reset button on the back of the computer. Try locating it by feel some time.

- ▶ Monitor power remains on when the Mac is powered down. Why on earth would anyone want the monitor to stay powered up after the Mac itself has been turned off?

These complaints make an otherwise fine computer a lot more difficult to use. I doubt that any cost savings realized by removing these features were worth the added inconvenience to the user.

*Dan Berks, systems engineer
Martin Bastian Communications
Minneapolis*

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105. MCI 323-1203; Internet, letters@macweek.ziff.com; fax (415) 243-3650. Include your name, address and phone number. Letters should not exceed 300 words. We reserve the right to edit for clarity and length.

The Mac Manager

No place for faux Macs in the modern world



DON CRABBE

Here's a multiple-choice test:

When buying new Macs for your department, your decisions are always based on:

- A. Price
- B. Performance
- C. Expected reliability
- D. Suitability to tasks
- E. None of the above

If you answered E, have I got a machine for you. You've read about it here in MacWEEK (March 15). Called the Duet, it's a combo platter featuring a 33-MHz Motorola 68030 with an Intel 486DX of the same clock speed tossed in for good measure (and to run DOS software). The Duet, which is manufactured by NuTek Computer Inc. of Cupertino, Calif., is yet another non-Apple Macintosh, this time without both Apple's sacred ROMs or its Finder graphical user interface, in an attempt to avoid the obvious legal entanglements. (I can't wait to run Mac software under Motif. Can you?)

One fact is clear: The days when a computer manufacturer could or should offer a reasonable Mac clone have forever passed. The impetus for such a box — that Apple charges too much for Macs — recedes with each new round of price cuts.

Wherefore dual CPUs? So with the Mac-clone argument dispensed with, the only remaining cause this faux Mac can serve is that of providing a cross-platform environment.

This sounds like an interesting concept on the surface: Build a Mac that also includes an Intel processor.

With this setup you could run Mac and DOS (or anything else that works on a 486 CPU) software together and have it share a screen, a hard disk, memory and so on.

The facts of

life. The hard reality of both personal and corporate computing these days is the overriding requirement of reliable, cost-effective performance. Who among us is going to trust our desktop computing operation to a science-project box such as the Duet? Who will plunk down \$2,996 to buy this dicey Duet, when for the same money you can buy a cheap 486 clone and an LC III, connect them via LocalTalk and integrate them with Farallon Computing Inc.'s Timbuktu?

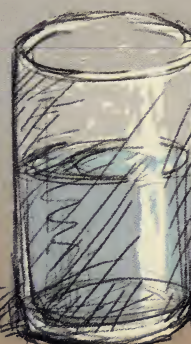
The bottom line is that if you want to do cross-platform computing, there are much better ways than this hybrid dual-processor machine.

Most cross-platform issues are centered on intelligent file sharing. While such problems haven't been completely solved, there are several products that can read and write files from Unix, DOS, OS/2 and Windows. And with new and improved translation schemes (such as Apple's Easy Open technology and third-party products such as DataViz Inc.'s MacLink), the need to have multiple operating systems running in the same box loses its urgency.

Those who insist on running both environments in the same box can already choose between Insignia Solution Inc.'s SoftPC, an all-software solution, and Orange Micro Inc.'s 486-based OrangePC NuBus card.

Perhaps when a PowerPC-based Mac that also runs DOS, Windows and Unix hits the street, multiple-environment desktop solutions will be more compelling. But even then, the vendors supplying us with our critical desktop machines will be mostly the establishment crowd, not nice but niche players. □

Pessimist's view



Half empty

Optimist's view



Half full

Developer's view



We are very excited about the glass. We'll be showing the full version at expo.

Scripting on the Mac

In-house programmers generally confine themselves to real programming — the kind that has compilers and long development cycles. But in many companies, operating system-level scripting systems, such as DOS batch files, Unix shell scripts and UserLand Software Inc.'s Frontier, provide some of the most important custom software they've got. When Apple's AppleScript is released this summer, scripting on the Mac may move from its current niche to a mainstream method for customization. This Special Report examines the use of scripting by in-house programming staff, on the Mac and other platforms, and presents a detailed look at development with AppleScript.

Tech Analysis

Going by the AppleScript

By Derrick Schneider

Apple's
upcoming
scripting
system fuses
HyperCard
ease with
high-level
power and
flexibility.

AppleScript, Apple's soon-to-ship Macintosh scripting environment, is a programming system that acts as an intermediary for controlling other applications through System 7's Apple events. It performs two basic functions: automating repetitive work and facilitating the exchange of data and instructions between applications.

Even when automating tasks, AppleScript works via Apple events, which are messages sent between programs, allowing one application to share data with or control another. For example, you could write a script that would take information in your database, chart it in a spreadsheet and then put the resulting graph into a page-layout program.

Some existing applications take direct advantage of Apple events, without needing AppleScript. Aladdin Systems Inc.'s StuffIt Deluxe can use Apple events to activate various virus-scanning programs to check files that StuffIt is compressing. But AppleScript can act as traffic cop and translator to link together applications that might not be set up to communicate on their own.

The HyperTalk connection.

AppleScript provides the capability to act as a macro utility, simply repeating any actions that you want, and the capability to add far more complexity through its programming language.

Users familiar with Apple's HyperCard will find many similarities with AppleScript's native language. Like HyperCard's scripting language, HyperTalk, the syntax of AppleScript programming

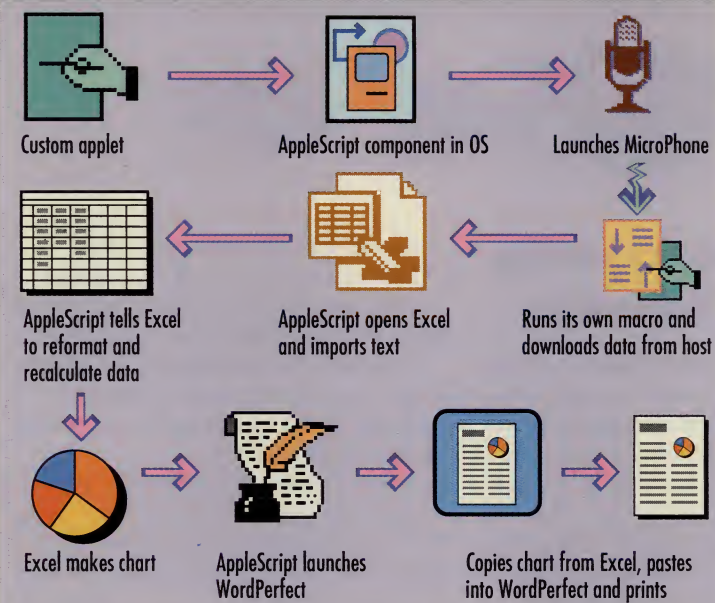
Command-line operating systems have benefited from built-in scripting for years.

By Mitzi Waltz

While there has always been an off-center minority of users who pine for a command-line option, there is a larger group that has smarted at the absence of operating system-level automation tools like those on other platforms. Apple's AppleScript will give in-house Mac programmers and power users tools similar to those already built into DOS and Unix environments.

Although scripting is far from traditional development, many companies depend on DOS batch files and Unix shell scripts as part of an MIS-driven user environment; they create custom batch-processing programs, improved command sets and other special functions. And often the job of creating these scripts falls to the internal developers who program everything else. In fact, some companies are already tackling Mac scripting using UserLand Frontier from UserLand

AppleScript uses other apps to do work



NEVIN BERGER

resembles that of English sentences. Users should be able to use AppleScript without a lot of training or expertise. In addition, just as HyperCard was intended to be a computing environment by itself, AppleScript is intended to be a central tool for controlling other tools.

Despite similarities with HyperTalk, AppleScript is a far more flexible and powerful language. AppleScript contains all the basic elements of a modern programming language — repeat loops, conditionals, subroutines and handlers — and includes additional features to make these elements more useful. Like a high-

level programming language, such as C, AppleScript can use arrays in variables, which allow scriptors to group related data under common headings and perform large operations quickly.

Invisible strings. Whereas HyperCard includes the user interface in which HyperTalk works, AppleScript is just a scripting system with very little interface control. It can display simple dialogs, but the end users of a script will have few ways of interacting with it.

This limitation poses some special design problems for scriptors
See AppleScript, Page 42

Taking a page from DOS and Unix automation tools

By Mitzi Waltz

While there has always been an off-center minority of users who pine for a command-line option, there is a larger group that has smarted at the absence of operating system-level automation tools like those on other platforms. Apple's AppleScript will give in-house Mac programmers and power users tools similar to those already built into DOS and Unix environments.

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RICK FRIEDMAN

Scott Joy of Liberty Mutual plans on using AppleScript to link the capabilities of in-house programs to off-the-shelf software.

Software Inc. (see story, next page).

Apple expects that the initial AppleScript users will be primarily in-house developers, value-added resellers and system integrators. Because AppleScript defines standard command classes and data objects that applications support through Apple events, the company anticipates that AppleScript will be

used mainly for communications between applications. AppleScript's straightforward native syntax will allow in-house developers to link off-the-shelf applications to build custom solutions.

Making links. Managers at DOS sites routinely link applications today through batch scripts.

Case Study

MasterCard tackles tedious tasks with UserLand Frontier scripting

By Steve Michel

Scripts save time by automating collection of data from the company's EIS system.

Complicated, repetitive tasks often take a back seat to more pressing day-to-day business — so much so that they don't get done frequently enough. Automation of dull work is one area in which scripting can pay off in a big way.

John Kline, systems analyst at MasterCard International of St. Louis, used UserLand Frontier 2.0, a Mac scripting system from UserLand Software Inc. of Redwood City, Calif., to transform one such task so that it became routine instead of occasional. And in doing so, he gathered the data needed to fine-tune a high-end executive information system.

Files, files everywhere ...

MasterCard uses a Mac-based EIS built in ACI US Inc.'s 4th Dimension database along with a SQL*Plus server from Oracle Corp. The system monitors usage of different database modules, such as entry screens and report generators. The resulting logs record who used the modules and when, and are basically just "lots of text files,"

Kline said. Analyzing module usage requires merging and collating the contents of these files.

"Until we had the scripts, the task was so manually intensive, we didn't perform it on a timely basis," Kline said. Since creating the Frontier scripts, the report has gone from being run only once in a while to "all the time."

Two capabilities of Frontier made it possible to script the data gathering and report preparation. Like Apple's HyperCard — but unlike AppleScript — Frontier includes a set of native commands that can open text files and read their contents. And, also like HyperCard, Frontier can address particular "chunks" of text within a file: words; lines; and other data structures, including custom ones.

Without this capability, Frontier would be forced to rely on some other program to read the files and send that data to Frontier via Apple events. That's how AppleScript would attempt the task.

The second feature in Frontier that Kline found important was its



RICK STANKOVEN

John Kline, systems analyst at MasterCard International, uses UserLand Frontier to merge and process textual log files from the company's 4D and Oracle EIS.

object database. Kline said that if the program didn't have an internal means of storing and organizing data, the script would have been much more difficult to write — or might not have been written at all.

Frontier's built-in database has the capability to match the way data is stored in the 4D database. "We were able to leverage off the database to take this data in and collect these statistics," Kline said. "It was the unique data structures in Frontier that allowed us to write the script so quickly."

While he could have performed the same task in HyperCard, Kline said MasterCard "probably wouldn't have tried, due to the required development time."

Because the scripts have been used routinely since they were written, Kline has been better able to optimize the 4D database.

into importable form and imports it." Using Frontier, this task takes about 30 minutes. "Done by hand it takes about two hours — I know, I've done it by hand — and it is more error-prone," he said.

Finally, Kline uses Frontier as a backup tool, in conjunction with StuffIt Deluxe from Aladdin Systems Inc. of Watsonville, Calif. He uses a special kind of Frontier script called a droplet, essentially a small application onto which files, folders and volumes can be dragged, to back up hard disks that store program-development data.

When Kline's droplet launches, it mounts all the hard disk volumes on his machine; launches StuffIt; and, through Apple events, tells StuffIt to compress copies of all the new and modified files from all the volumes onto a magneto-optical drive.

"It's very convenient," he said, and "it does exactly what I want it to do — nothing more and nothing less." □

For example, T.G. Browning, owner of MorganSoft, a Salem, Ore.-based programming company, uses batch files to bridge programs by automating file translations.

"You can use it to take output from one program and use it [as] input for another one," he said. "A lot of times I've used batch files when I have a long, complicated set of things that has to be done. I can chain the operations together that way without having to keep manipulating a whole bunch of files [manually]."

AppleScript users will be able to automate much of the same kinds of tasks and will not be limited to manipulating plain text because Apple events can understand more data types. Scott Joy, project manager at Portsmouth, N.H.-based Liberty Mutual Insurance Group, said he's looking forward to using AppleScript to link custom programs developed in-house, such as proposal generators, with off-the-shelf word processing software.

Stand-alone scripts. AppleScript lets you save scripts into small applications that, when opened by double-clicking, can

trigger a whole sequence of events, possibly involving several different applications. But whereas a DOS batch file or Unix shell script tells another program what to do only at start-up, a scripting system, such as AppleScript or Frontier, tells the program what to do while the program is running. This permits back-and-forth data exchange and even conditional changes in execution.

With the right applications and AppleScript's automatic recording functions, managers can also create scripts that act like macros performing routine tasks within an application.

"Normally, you use batch files for something quick and dirty — something you would need for only a short period of time," Browning said. "But you can also automate processes that are horribly tedious to do over and over."

See Automation, next page

Managers can create scripts that act like macros to perform routine tasks within an application.

Administrating with scripts.

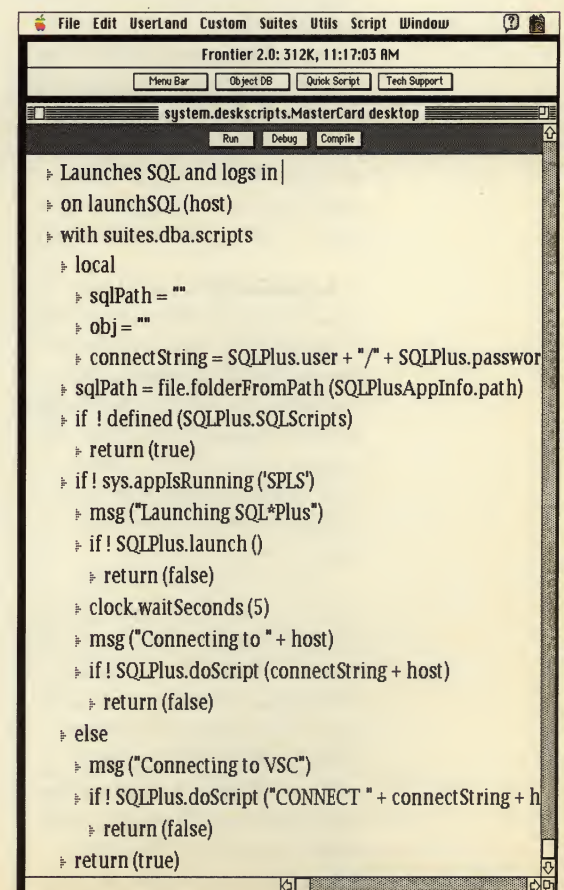
Kline also uses Frontier and its Apple-event scripting capabilities to support administrative tasks in 4th Dimension and SQL*Plus, such as adding user accounts to the system. In addition, when tables are added to the database, new privileges must be added using series of SQL commands.

"Of course, you can do it without a scripting system," Kline said, "but it was much more difficult and required more administrative time on my part."

New SQL commands have to be written each time a table is added. Now, Kline's Frontier scripts handle this task "automatically and flawlessly." SQL commands are stored in Frontier's database and sent to Oracle's SQL*Plus using Apple events.

In addition, Frontier's text-file-reading and data-crunching capabilities allow Kline to use the system to take data exported from MasterCard's mainframe and upload it to the Oracle database.

"We upload about 12,000 records a week," he said. "Frontier takes the data in its raw state and massages it



AppleScript

From Page 40

because they can't rely on detailed feedback from users. More often, a script acts like a macro, performing its tasks without input. The most script writers can do is ask users questions, display push buttons or allow users to fill in a field, and notify them of events about to happen.

AppleScript is supposed to get its interface from other applications. For instance, a script could manipulate data entered in a database front end and place the results into a word processor or spreadsheet. The script wouldn't need an interface separate from the programs in this case.

Just as external commands (XCMDs) add to HyperTalk, aete resources extend the reach of AppleScript. When AppleScript controls an application, it uses commands that the application defines through its aete resource; the resource acts as a map between AppleScript commands and the Apple events and data objects that the program understands.

Consequently, AppleScript is not limited to working with specific, predefined events or pieces of data. No matter how unusual the data structures of some applications — whether tables, sound or even the RGB (red, green, blue) values of a pixel — a scriptor can access them provided there is an aete resource in the application.

For example, AppleScript doesn't have the capability to understand the contents of a StuffIt compressed archive by itself. But because of the aete resource in StuffIt Deluxe, AppleScript can manipulate and extract archived information freely.

AppleScript's not Unix.

AppleScript's ability to move data between applications is akin to the use of shell scripts on Unix machines (see story, Page 40). Just as information is piped from one program to another in Unix, AppleScript can pass data back and forth between Macintosh applications.

Unlike Unix, however, the AppleScript scriptor must specify exactly what the application should do with the data. Even a simple task such as charting some numbers may involve a fair amount of handholding. For example, a script might need to instruct the application to put data into cells, make a chart with all the data, adjust some of the chart param-

eters, then copy that graph as a PICT file and send it back to the script so it can be placed into another application.

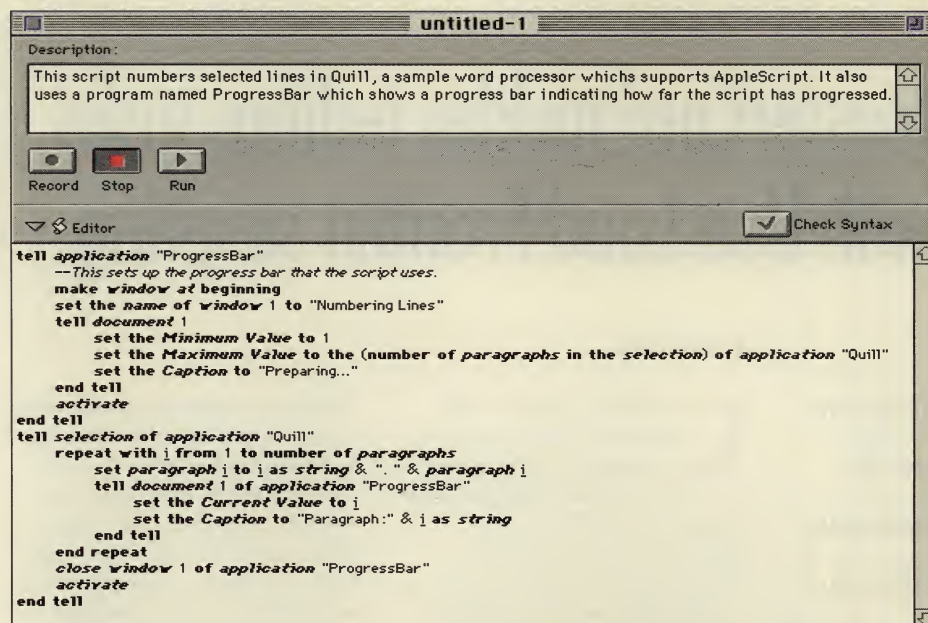
In Unix, filters can pump data from a file or keyboard or the output of another filter into a file, the screen or another filter. The process is blind and the recipient of the input doesn't have to be told what to do with the data. An AppleScript script, on the other hand, must specify that the data move from one specific application to another.

For example, to perform a mail merge between a database and a word processor, the AppleScript user must have the script obtain the data from the database and then place it into the word processing document. Trivial as this sounds, it actually requires a long script to successfully control every interaction between the two programs. While not as powerful as Unix shell scripts and filters, AppleScript is far easier for end users to understand. Even though scripts can run in the background, however, the Macintosh's lack of Unix-like multitasking can slow performance during script execution.

Other limitations. AppleScript has one important shortfall: Only applications that support AppleScript technology can make use of its scripts. For an AppleScript script to control or communicate with an application, the application must support Apple events and provide an aete resource so that AppleScript has access to its commands and data objects.

Although it isn't absolutely required, commercial developers are encouraged to implement Apple's Object Model to support Apple events and AppleScript fully. The Object Model provides a way to pinpoint data based on its relationships to other data. Since many such relationships are common to groups of applications — cells in spreadsheets, paragraphs in word processors, the selection in just about anything — working with data is easier for the scriptor.

Is it attachable? Beyond making an application scriptable, developers can opt to make their software recordable or attachable. Recordable means a user can generate an AppleScript script based on actions performed inside the application, similar in intent to the way Apple's old MacroMaker or CE Software Inc.'s QuickKeys works. Attachable means AppleScript scripts can be associated with on-screen interface elements. For instance, custom scripts can be attached to a program's



buttons or menu commands.

To provide these types of functionality, however, developers must rewrite their applications completely. To be recordable, the application must be able to send Apple events, such as "move window" and "delete selection," to itself. It's these internal Apple events that get recorded.

Because full support of AppleScript requires so much effort, commercial applications that can

record user actions or attach scripts aren't available yet.

Access privileges. In addition to its strength as a programming language, AppleScript includes several other capabilities, such as the ability to communicate with programs on remote machines, that potential scriptors should find attractive.

For example, data obtained from
See AppleScript, next page

Current AppleScript betas come with a minimalist editor but still perform "fancy formatting" of scripts.

Automation From previous page

Apple and scripting-system watchers said that with AppleScript the scope of what you can do will change. For example, Liberty Mutual sends out a CD, containing data taken from the corporate mainframe, to its sales force each quarter. According to Joy, "With AppleScript, you can automate the process of taking that information from the mainframe, archiving it and password protecting it."

Batch processing also fulfills managers' needs to create scripts for installing home-grown applications on differently configured systems.

New interfaces for old.

Another frequent use for batch files is creating scripts that gloss over DOS' interface for inexperienced users, Browning said. An in-house programmer might script a system that provides users with a list of options — "Enter 1 to access payroll; enter 2 to access word processor," for instance — instead of requiring them to learn strings of DOS commands.

Raymond Yue, senior information systems consultant at peripherals manufacturer Storagetek Corp. of Louisville, Colo., uses Unix shell scripts to make the company's Sun Microsystems Inc. workstations more user friendly.

Yue created two log-on options

that rely on shell scripts. "We wrote one where all users have to type in is 'menu' to make it look like a menu-driven system. They seem to like that a lot," Yue said. "I also have a shell script imitating DOS features." DOS die-hards working on the Sun can type the word "DOS" to use their familiar commands, which Yue's script automatically translates into Unix commands.

"The learning curve went down right away with that," he said.

For its part, AppleScript will allow buttons and dialog boxes to be attached to scripts so that users can interact with a script without having to deal with the complexities of the underlying language.

Not all proposed features of AppleScript will be available on first release. But according to Laura Hamersley, product manager of component technologies in Apple's Development Tools Group, the company is already working on a set of more sophisticated scripting tools for future releases, including a more scriptable version of the Mac operating system.

A new version of the Finder that supports scripting is being distributed with AppleScript betas and eventually will be part of a future package. But even in AppleScript's limited initial form, Macintosh power users and in-house developers will gain many of the same scripting capabilities that DOS and Unix users have today. □

AppleScript

From previous page

a database in one department can be combined with information from a database in another department for use in a letter or report. Such a capability requires that a network's various machines have program-linking privileges turned on in System 7's file-sharing mechanism.

While users will be constrained by the same privileges and accounts they have for file-sharing access, the security aspects of peer-to-peer program linking could still prove a headache for network managers.

Since AppleScript is a system-level scripting language and component used by QuickTime's Component Manager, accessing AppleScript from within a program, from a developer's standpoint, is as easy as accessing the capabilities of QuickTime. For end users, AppleScript can be accessed via Apple's minimalist script editor or, if the support is there, by running it from within an application.

AppleScript also allows users to create stand-alone applications, even implementing drag-and-drop capability. These so-called applets and droplets allow users to execute scripts by double-clicking or dragging files onto them. The only requirement is that AppleScript be installed on the machine. Applets are particularly useful for consultants or network managers who want to leave self-contained scripts on a client's or employee's machine. The user treats them as normal applications without ever having to see the scripting environment.

Memory requirements. The AppleScript extension requires only 30 Kbytes of RAM, but the memory requirements of commercial and in-house applications certainly will increase as they are rewritten to support AppleScript. Since Apple events can be sent only to open applications, running a complex script creates a RAM-hungry environment.

You can avoid hitting your memory ceiling by reading data into variables and launching and quitting applications as the script executes. In such a scenario, AppleScript acts as an intermediary, opening and closing applications and storing information as needed so that it can transfer data to the next program in the script. Since such a procedure can eat up a lot of clock cycles, scriptors should be advised to take advantage of applications running on other machines on the network. Thus, rather than quitting and launching applications on one machine, a scriptor could make use of programs running on other machines on the LAN.

Foreign languages. AppleScript can translate its scripts into other languages because it stores the code in a generalized internal format. Thus, a scriptor writing in Japanese could give the script to someone in the United States, who could then run the script on a Macintosh with no Japanese-language extensions. Should the U.S. scriptor look at the code, it would appear in English.

The aete resource, however, must be translated so the script reads normally for users on non-American systems, and this customization may slow development for vendors who are localizing their software.

Variety of uses. AppleScript's ability to link applications and send Apple events over networks, along with its robust native scripting language, make it ideal for coordinating large projects, such as using the information in a database and spreadsheet to update an accounting package and mailing-label utility.

By running AppleScript over a network, managers can coordinate routine tasks, such as installing new software. At the same time, AppleScript can be used to accomplish small

tasks, such as automating the creation of aliases, organizing files into certain folders and retrieving information regardless of the application. Consultants can give clients self-contained scripts to take care of various chores.

When more programs support Apple events, the aete resource and AppleScript, users will be able to manage a wider variety of projects. For instance, a multimedia package that supports AppleScript could be used

to automate some aspects of production, even manipulating video and sound. A page-layout program could be linked with a database through AppleScript to update and publish catalogs.

As long as your favorite application tells AppleScript how to work with its data, AppleScript will be able to simplify any repetitive tasks that you want. And the ability to create stand-alone applications will help scriptors to distribute their work widely. □

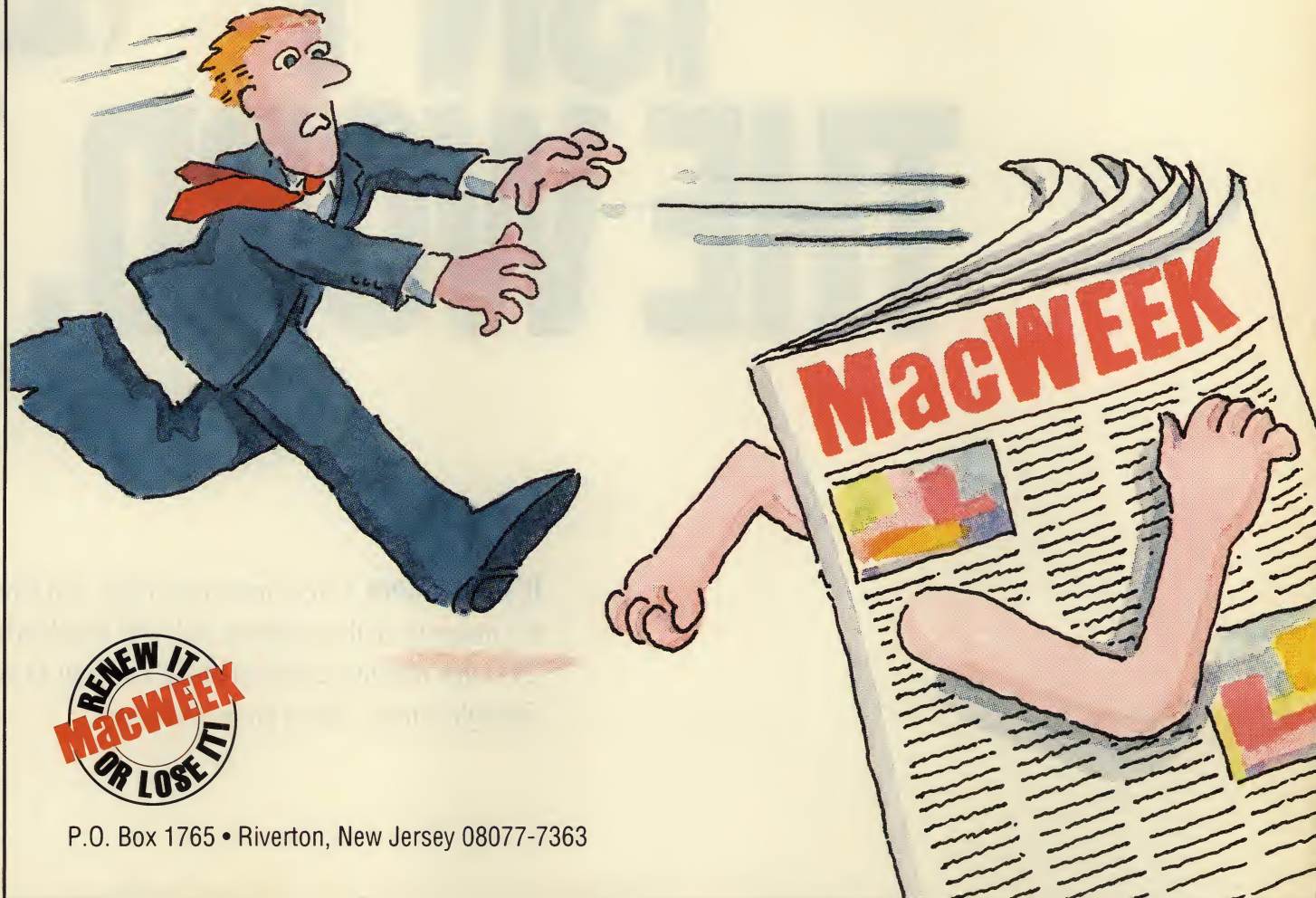
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PLANNED GROWTH

To Matthew Long, it just didn't make sense.

His beloved hometown of Elke, Maine, has had a severe housing shortage ever since the big pizza-sauce factory opened in nearby Bukovina.

Workers—who have done much to spur the local economy—are doubling, even tripling up in small apartments. Some are even sleeping in cars.

Mr Long, who happens to be a contractor, wants to help by building



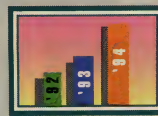
affordable new homes for these workers. Unfortunately, that's the last thing the Elke Zoning Board wants to happen.

Elke, they say, has enough houses. "We have to control our growth," says Barney Hotchkiss, longtime resident and curmudgeon, "we don't need

any more strangers than the ones we have now."

Mr Long sees it differently. "I think it's pretty cheesy. Everyone was a stranger here at one time or another."

While the current recession has generally eased much of this country's growth problems, in any areas it has not abated at all. In Las Vegas, population increases



LAS VEGAS - Ever since gambling came to the desert town, people have, too. Between 1970 and

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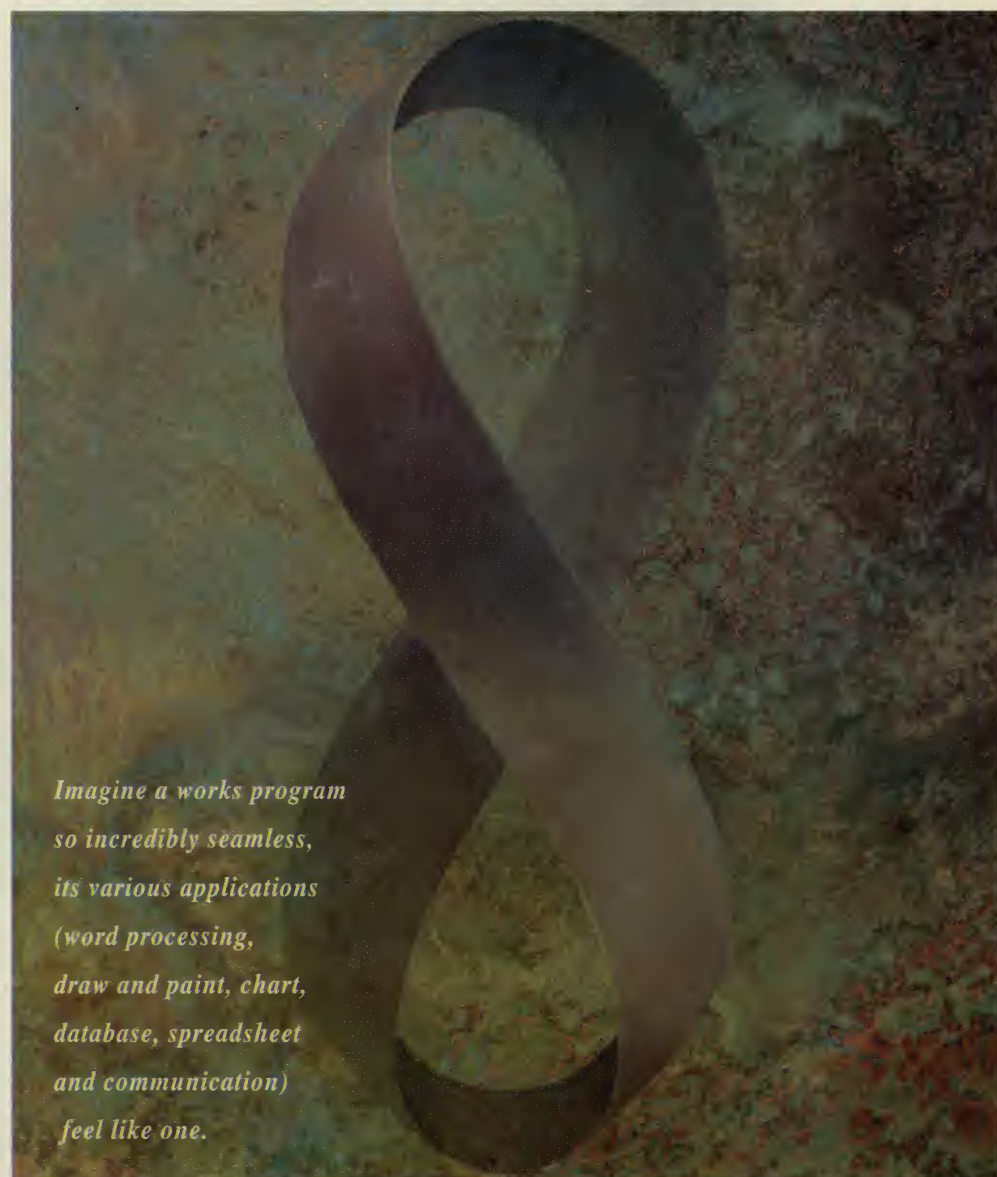
FEATURE	WORDPERFECT WORKS	CLARIS WORKS	GREAT WORKS	MICROSOFT WORKS
In-Context Editing [™] (multiple documents)	YES	NO	NO	NO
Paint and Draw	256 custom	81 draw	256	NO
Common tool bar with module-specific tools	YES	NO	NO	NO
Log-in scripts/phone book	YES	NO	NO	YES
Multiple columns can be turned on/off anywhere on the page	YES	NO	NO	NO
Auto Sum Tool	YES	NO	NO	NO

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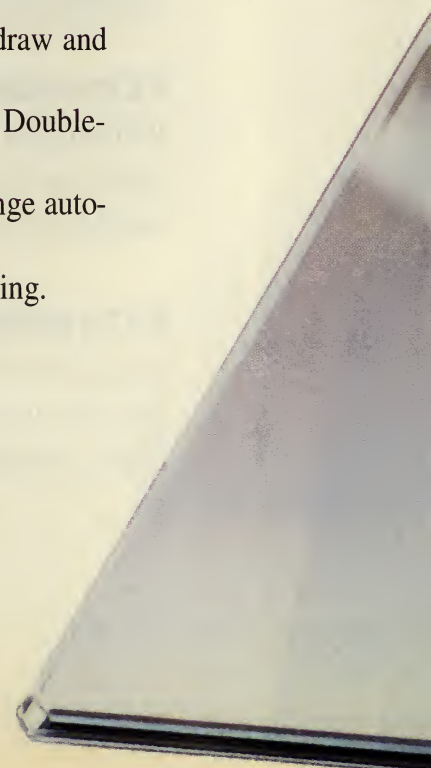
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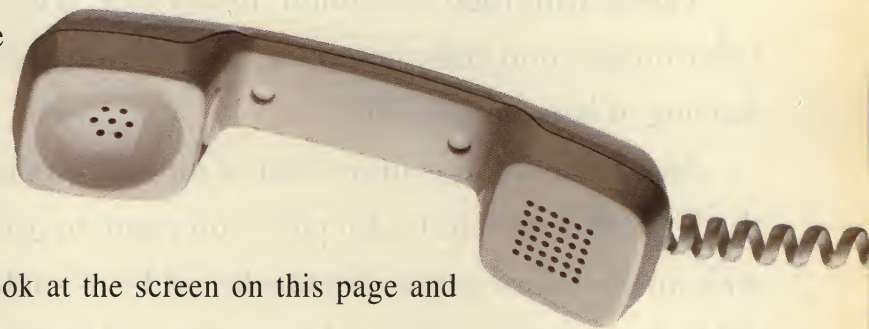


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Reviews

► Reviews Forum. See Page 51.
► XGT/ADB. See Page 54.
► Media Suite Pro. See Page 56.



Now Up-to-Date 2.0 makes key appointments to feature set

With added options and stronger network support, Now's application remains a solid choice for calendar management.

By Dale Coleman

Version 2.0 of Now Software Inc.'s Now Up-to-Date includes a number of important new features and enhancements to existing features that strengthen the product's position as one of the best appointment calendar and reminder programs for the Mac.

The networking functionality of the \$99 product has been improved as well, making it an attractive choice in multi-user environments (see story, next page).

Make my metaphor. Now

Up-to-Date uses the metaphor of a printed calendar or date book to represent your information in different formats. These formats, or views, include Month, Week, Year and Multi-Day displays, as well as a List view for displaying to-do items. You can easily switch between different views at any time and create style sheets that improve the readability or print quality of your calendar.

Events are Now Up-to-Date's basic schedule item. Version 1.0 had only a single event type and the capability to add Post-it-style notes and floating banners, which could function as pseudo-events. Now Up-to-Date 2.0 has been beefed up in this respect.

There are now five distinct event types — Appointment, Special, Holiday, To-Do and Unscheduled To-Do. Appointments are tied to a specific day and time, while the Special, Holiday and To-Do events are associated only with a day. All events can be repeated, and you can easily move events from one day to another by dragging them around.

Each event can be fine-tuned with its Event Info window, which is a floating palette. The Event Info window lets you modify an event's characteristics, including its title, type, duration, category, priority, repeat status and reminder information. This window also includes a description field and last-modified information. Pop-up menus for many characteristics make the Event Info window very easy to use. Our only complaint is that, like all

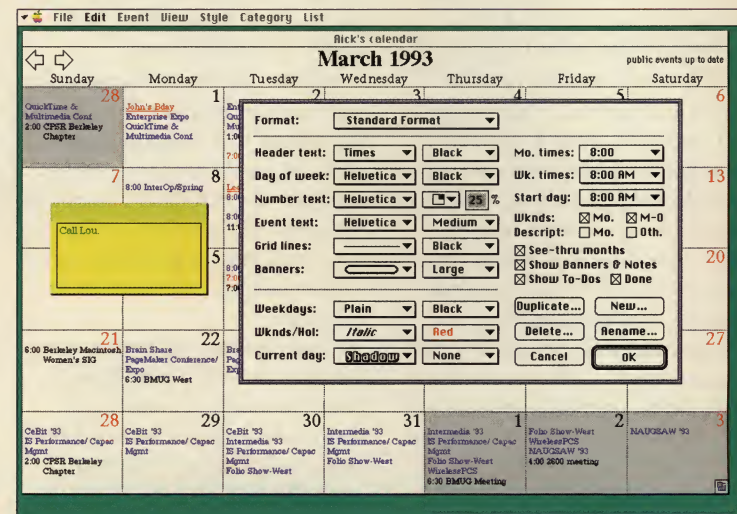
floating windows, the Event Info window hangs around in the foreground when you click on the main window.

The category game. Now

Up-to-Date lets you group events by category. There are two types of categories — public and private, and you can create multiple categories within each type. Events in public categories are available to other Now Up-to-Date users on your network; events in private categories are not.

Version 2.0's multiple categories are a vast improvement over Version 1.0's single category. Grouping events into logical categories helps to make calendar management easier, especially when combined with Now Up-to-Date's sets capability.

The sets feature allows you to



The Define Formats dialog box in Now Software's Now Up-to-Date 2.0 allows you to create multiple style sheets for viewing your calendar information.

fine-tune which events are displayed at any one time, by displaying only categories specific to that set. You can create multiple sets and swap between them by simply choosing the set you want from the Category menu. The first 10 sets you define are also assigned a Command key.

For example, you can have a personal set that contains your social events and a work set that contains

business meetings and other work-related activities.

You could also create a travel set that displays banners with your travel information contained on them.

Once you've learned the related concepts of categories and sets, you'll immediately be able to use Now Up-to-Date effectively and efficiently. The interface is generally that good.

See Up-to-Date, next page

MapInfo 2.0 makes desktop mapping a snap

By G. Donald Bain

Desktop mapping has changed the way users look at information. Any analytical task with a spatial component, such as planning delivery routes or even understanding the world economy, can profit from this rapidly evolving class of software. Accelerating this process is the goal of MapInfo Corp.

The company recently released MapInfo 2.0, a major upgrade of the product. Version 2.0 features more than 100 map projections and coordinate systems, improved digitizing, better control of printed output, and advanced GIS (geographic information systems) features, which bring new power and geographic sophistication to desktop mapping. The application is \$995; upgrades from Version 1.0 are \$250.

Maps and tables. MapInfo allows you to open any number of map layers with associated data. You can scroll through the map window and zoom the view in or out.

As the magnification increases, new levels of detail may appear, depending on which maps are open. This detail ranges from a global view

of countries, including a united Germany and the former Soviet republics but not divided Czechoslovakia or Yugoslavia, down to street maps of U.S. cities and even further.

Data may be linked with map objects, either as part of the same table or associated with a map table via a common field. Data tables, whether linked to layers in a map or not, can be displayed in spreadsheet-style windows. Selection is inter-

active — selecting on the map highlights the object's row in the associated table, and vice versa.

Clicking map objects with the Info tool opens a floating window that shows associated data. Likewise, the Name tool writes the object's name on the map, and the Ruler tool measures distances. Since maps normally are in real-world coordinates (latitude and longitude), positions

See MapInfo, Page 51

score card

Now Up-to-Date

Now Software Inc.

Version tested: 2.0

List price: \$99*

Overall value ♦♦♦♦

Version 2.0 of the Now Up-to-Date calendaring application includes several features that significantly enhance its utility. For the single-user environment, these include more scheduling options, to-do lists, multiple private categories, improved printing capabilities and additional views. In addition, you can set event reminders, access scheduled events via a control panel device, and import events from as well as export events to Sharp Wizard personal organizers. The networking capabilities in Version 2.0 have been improved as well, offering multiple-server connections and off-line editing of public events. The networking features aren't as comprehensive as we would like, but they should be satisfactory for many small workgroups.

Performance ♦♦♦♦

Features ♦♦♦♦

Ease of use ♦♦♦♦

Documentation/support ♦♦♦♦

*Single-user pack, five-user pack, \$499; 10-user pack, \$799; 50-user pack, \$3,799. Single-user upgrade from Version 1.0, \$29.

RATINGS KEY

- ♦♦♦♦♦ Excellent
- ♦♦♦♦ Very good
- ♦♦♦ Good
- ♦♦ Fair
- ♦ Unsatisfactory

score card

MapInfo

MapInfo Corp.

Overall value ♦♦♦♦

Version tested: 2.0

List price: \$995*

MapInfo has emerged as the leading desktop mapping program. With a well-designed interface, good documentation, powerful mapping and analysis features, import and export capabilities, and large libraries of available base-map and data files, it provides an unprecedented opportunity for the analysis of spatial data. Its programming language, MapBasic, along with support for Apple events, opens the door for custom add-ons and vertical-market products. There are a few minor problems with the program, and the drawing tools could be improved to create publication-quality maps, but MapInfo 2.0 is both powerful and easy to use.

Performance ♦♦♦♦

Features ♦♦♦♦

Ease of use ♦♦♦♦

Documentation/support ♦♦♦♦

*Upgrades from MapInfo 1.0, \$250; MapBasic, \$795 (requires MapInfo).

Up-to-Date *From previous page*

Just do it. The To-Do event types fill the most obvious gap in the previous version's feature set. After all, not all events are holidays or meetings. While Now Up-to-Date's To-Do feature lacks some of the power and features of Attain Corp.'s In Control 2.0, a stand-alone list manager that is the best in its class (see MacWEEK, Feb. 8), we think it meets the requirements of most users. Scheduled To-Do events can be carried forward until you mark them as completed, and they can also be specified as repeating events. Unscheduled To-Dos are not associated with a date and appear only in the List view. This type of event can include such things as goals and tasks that are not time-critical.

Reminders are now handled by a control panel that was previously available as AlarmsClock in Now Software's Now Utilities.

In addition to the standard kinds of reminders that these utilities provide, when you specify a calendar file, Reminder can be used to create and view events without having to load the application itself. The control panel installs a clock on your menu bar; clicking on it displays a list of the current day's events.

Repeating events. Now Up-to-Date 2.0's repeating events capabilities are much more flexible than those of the previous version. It is now easier to create oddball or unique repeating events, but there are still a number of limita-

tions that we would like to see addressed. The name of a repeating event and its description cannot be changed on a date-by-date basis. If you wanted to add a speaker name to the description field of one event, it automatically gets added to all linked events.

Another problem with repeating events occurs if you need to move the starting date of a group and want to have the repeating events realign to the new date. You can go through some gyrations to change the group, but it is generally easiest to delete the old events and create new ones.

On the positive side, when you delete an event in a linked group, Now Up-to-Date gives you the option of deleting all events in that group, only future events or the selected event.

Improved features. The new version includes enhanced data-management features that make maintaining a calendar a smoother task. In addition to the standard import and export of tab-delimited text files, you can now archive all events prior to a specified date. This lets you reduce the size of your calendar, which in turn ensures good performance and enables you to run Now Up-to-Date in a reasonable memory partition. (The suggested 800-Kbyte size is adequate for most users.) Archived events are also saved as a tab-delimited text file, so they can be restored to the calendar as needed.

Now Up-to-Date also supports Sharp Electronics Corp.'s popular Wizard line of pocket electronic

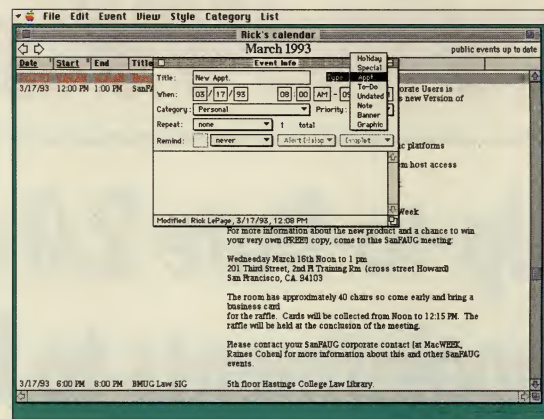
personal organizers. You can both import and export events with the Wizard, which is much better than the one-way (export-only) functionality offered in most other Wizard-supported calendar programs.

Printing, which in the previous version required a special module, is integrated into the application in Version 2.0. A wide range of printing formats is supported, from small appointment books to oversize formats suitable for wall mounting.

How good is it? These new features and improved existing features are well-integrated into Now Up-to-Date's intuitive and flexible interface. Now Up-to-Date is still a very good example of the importance of a clean user interface.

This is not to say that Version 2.0 is perfect. From time to time you may find that the implementation of a feature is more conducive to annoyance than productivity. For example, we found event descriptions unnecessarily clumsy to manipulate. They don't expand automatically as you add text, and hiding or displaying descriptions in a view is an all-or-nothing proposition that requires a trip to the somewhat intimidating Define Formats dialog box.

One thing that Now should look at is the multitude of dialog boxes that adjust preferences and formats. Many times, we had to do a lot of searching of menus and dialog boxes to determine the right place to turn an option on or off. It took a while, for instance, to find the proper place to turn off the display of event



There are five distinct event types in Now Up-to-Date 2.0, plus free-floating events such as Banners and Notes. Version 2.0 also has a new List view, shown here, that allows you to manage your to-do lists in an easy manner.

descriptions in the Month view.

Most of our complaints are trivial and do not inhibit the overall usability of the product. Now Up-to-Date is so well-designed that we found ourselves asking more of it than we should.

Documentation and support.

The 330-page documentation is as good as the software it documents. It is clearly organized and includes an overview, tutorial, command reference and glossary. In addition, the narrative is excellent in describing the various features of Now Up-to-Date. The multi-user package includes a brief but information-rich QuickStart Guide for each user.

Technical support is available during Pacific time business hours via a toll call. The company can also be reached through the major commercial on-line services.

Conclusions. Personal information can be difficult to categorize. For some, a calendar is nearly useless unless it also provides access

to name and address information. Pastel Development Corp.'s Day-Maker includes a simple address and phone book and automatic dialer.

After Hours Software's DateBook provides simple access to the company's TouchBASE contact manager, using the vehicle of inter-application communications. In addition, After Hours is currently beta testing DateBook Pro and TouchBASE Pro, which reportedly feature much tighter integration and expanded feature sets. Now Software is behind in this matter and needs to add support for Apple events for those users who want to exchange schedule data with other applications.

The networking capabilities of Now Up-to-Date 2.0 are much improved over previous versions, and many workgroups will be happy to live within the constraints that the program provides. Resource allocation and true scheduling will need to be present in future versions of Now Up-to-Date, however, for it to grow into large organizations on a wider level.

In general, though, we think Now Up-to-Date 2.0 provides the right suite of features for managing appointments and time-based information. Now Software has done a good job of updating the product to make it easier to use, more accessible and more powerful for both single users and workgroups. This combination of well-conceived features and mostly beautiful interface make Now Up-to-Date 2.0 a very good choice for calendar management.

Now Software Inc. is at 520 S.W. Harrison, Suite 435, Portland, Ore. 97201. Phone (503) 274-2800; fax (503) 274-0670. □

Making the multi-user connection with Up-to-Date

Version 1.0 of Now Software Inc.'s Now Up-to-Date had networking capabilities, but they were extremely limited in their functionality. Now Up-to-Date 2.0 has improved networking features that make the product work as well for the workgroup as it does for the individual.

Now Up-to-Date's Public Event Servers do not have to be run on dedicated machines, although it helps keep performance up.

Version 2.0 adds support for multiple servers, and you can be connected to more than one Public Server simultaneously. The Server Connections dialog shows server name, zone, status, date and time of the last update, and the specified frequency of updates. This dialog supersedes the special Chooser document employed by the old version.

To view events on a Public Server, all you have to do is set up the categories and sets you wish to view, and the server takes care of the rest. When you quit Now Up-to-Date, the public events viewed in your sets are stored with your local calendar file.

Off-line editing. The most appealing new network feature is the ability to create and edit public events while off-line.

Once you reconnect to the network (and launch

Now Up-to-Date), your calendar file is automatically updated. If an event has been modified both on the Public Server and your local file, Now Up-to-Date notifies you of the situation and lets you resolve the conflict manually.

Now Up-to-Date is surprisingly responsive when used in a network environment. It's easy to imagine that an overburdened network could adversely affect performance, but our real-world testing showed Now Up-to-Date 2.0 to be a good network performer except when the server was otherwise distracted.

Light security. Your evaluation of Now Up-to-Date 2.0's network implementation will depend to a great extent on your expectations and requirements. Security is noticeably weak, mainly because Now Up-to-Date doesn't use a "log-on" mechanism for public access.

You can password protect a category to prevent someone from either viewing or creating and modifying events in that category, but it's an all-or-nothing proposition.

It would be nice to have the capability for the creator of an event to be the only one who could modify it.

Passwords to specific categories are stored in

your local calendar file, so you don't have to keep entering it whenever you change an event.

What it isn't. Now Up-to-Date is not a particularly efficient tool to notify other users of new group events. ON Technology Inc.'s Meeting Maker is much better suited to this and other scheduling tasks. If you want resource allocation and meeting arbitration, Meeting Maker is a much better product.

(ON Technology recently announced Meeting Maker XP, which adds, among other things, Microsoft Windows compatibility and a portable client. This last capability reportedly will allow you to have your calendar available when you are not connected to the server, much like the current version of Now Up-to-Date. Meeting Maker XP is scheduled to ship in the second quarter.)

Now Software is committed to adding arbitration and other scheduling tasks in a future version of Now Up-to-Date, but if you need them now, Meeting Maker is the way to go.

If scheduling and allocation is not as important as access to schedules and calendars, Now Up-to-Date 2.0's network capabilities and its performance are very good.

Now Up-to-Date 2.0 is available in three multi-user configurations: a five-user pack for \$499, a 10-user version for \$799 and a 50-user pack for \$3,799. — By Dale Coleman

SYSTEM 7 COMPATIBILITY

Now Up-to-Date 2.0

Balloon help	Yes
TrueType	Yes
Publish and subscribe	No
Apple events	No
32-bit addressing*	Yes

*According to vendor.

MapInfo

From Page 49

can be determined exactly. As an alternative to freehand panning and zooming, it is possible to type in a desired scale and the coordinates of the area to be viewed.

You can create basic choropleth, dot density, symbol and scaled-symbol thematic maps using data from tables. Any data set can be graphed (as area, bar, line, pie or scatter). New map objects, or whole new maps, can be created with a limited but useful set of drawing tools.

Tabular data can be read in directly as text, spreadsheet or database files, and graphic elements can be imported in AutoCAD's DXF (Drawing Interchange File) format. Since the street maps (based on the Census Bureau's Tiger files)

include number ranges block by block, data that includes street addresses, such as customer lists, can be automatically geocoded and placed on the map.

Powerful find and select functions allow map objects to be located by name or other attributes. Selections can also be made graphically on the map: The polygon search tool finds all objects within a map polygon (customers within a certain ZIP code), while the radius search tool selects within a circle drawn on the map. Whether made graphically or logically, a group of selected objects can be saved as a new table and map layer.

The company offers an extensive catalog of compatible base maps, including corrected and improved Tiger street maps (available as Street-

Info and StreetInfo Plus), census tracts and block groups, counties and local government boundaries, congressional districts, and ZIP codes, as well as selected demographic and economic data. Given the program's powerful tools, almost any geographically oriented data can be imported, viewed as maps and analyzed.

More power. MapInfo 2.0 now allows you to view maps in a number of different projections and coordinate systems. The sophistication of this feature marks a new high for desktop mapping—in addition to 17 world projections, each customizable, it supports local projection/coordinate systems such as universal transverse Mercator (UTM), both the old and new State Plane systems (1927 and 1983 North American Datum), and special cases for such far-flung locations as Somalia and Pitcairn Island. When one of the local systems is used, the coordinates are automatically displayed in the correct system (100,000-meter grid references in UTM, for example, or U.S. Geological Survey feet for 1927 State Plane). These are widely used in surveying and offer distinct advantages over latitude/longitude for projects of limited geographic scope.

Input of geographic data directly from digitizing tablets has been enhanced and now supports multiple control points; input from projected maps; and local coordinate systems, such as UTM and State Plane.

The new Layout window allows you to manipulate various MapInfo views (maps, graphs, tables) as they will be printed. You can arrange them on the page, resize them and annotate them with the text, symbol and drawing tools. This takes uncertainty out of printing MapInfo results.

Two functions characteristic of true GIS programs have been added. Buffering allows creation of new polygons extending a stated



Questioning the value of Windows on Mac

I would like to respond to Steve Michel's review of SoftPC with Windows 3.0 for the Macintosh (MacWEEK, March 15). In particular, I would like to address the low value rating that he gave the product.

I am surprised that a product with a street price of \$299, which includes full working versions of MS-DOS 5.0 and Microsoft Windows 3.1, could receive such a low-value rating. The cost of MS-DOS 5.0 and Microsoft Windows 3.1 alone is \$150. SoftPC with Windows 3.0 saves Macintosh owners who have an occasional need to run Windows applications a minimum of \$1,000 over alternative solutions.

In general, SoftPC with Windows 3.0 does not perform as

quickly as Michel would like, yet our customers find SoftPC provides acceptable performance for occasional use of MS-DOS and Microsoft Windows 3.1 applications, and it does so at a reasonable price.

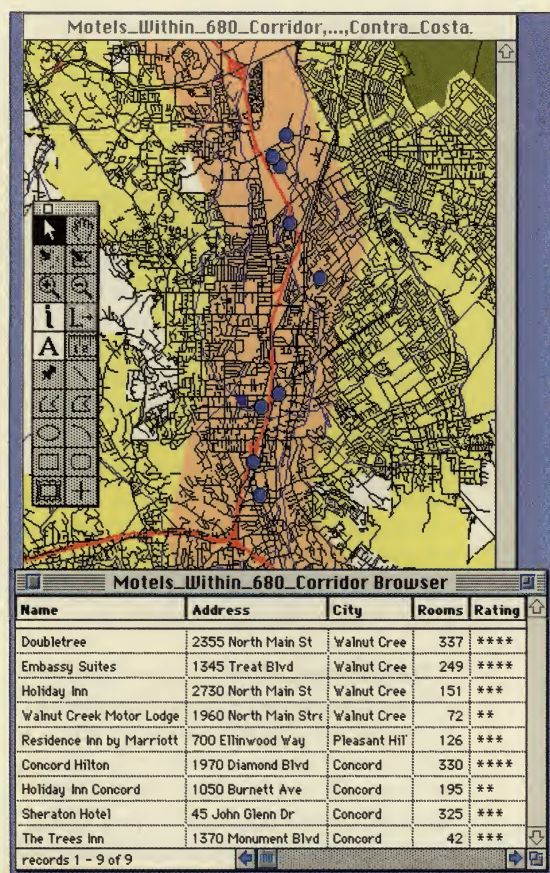
*Paul Kerr, product manager
Insignia Solutions Inc.
Mountain View, Calif.*

MacWEEK replies:

The Overall Value rating in MacWEEK reviews is not solely related to price; it encompasses performance (speed and execution), usability, features, support and more.

The fact that SoftPC with Windows 3.0 is inexpensive is not a good enough reason to own it. It must perform well, and in our opinion, the performance of SoftPC with Windows was not satisfactory. As we stated in the review, SoftPC Professional 3.0 is a better buy for occasional MS-DOS use.

*Send your comments to MacWEEK
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and phone number. We reserve the
right to edit for clarity and length.*



The StreetInfo file for Contra Costa County, Calif., has been used to geocode a list of motels and place them on the map by their street addresses. A buffer zone extending one mile from either side of Interstate 680 was then created and used to select motels near the freeway.

MapBasic turns MapInfo into development system

By releasing the MapBasic language, MapInfo Corp. has transformed its MapInfo from a stand-alone desktop mapping product into a geographic development environment.

MapBasic is sold as a separate product for \$795 and requires the \$995 MapInfo package. MapBasic allows incorporation of MapInfo operations (menu commands, SQL statements, file handling, window manipulation) with standard BASIC programming features (mathematical and logical calculations, manipulation of arrays, definition of variables, custom data types, and so forth) into external modules accessed from the MapInfo Run command. MapBasic programs are compiled to binary form so they should be compact and fast, and they are platform-independent, so modules developed for the Microsoft Windows platform can also be run on the Mac, and vice versa.

Three types of products are anticipated:

- ▶ Turnkey systems for vertical markets or individual customers.
- ▶ Utilities that automate some routine aspect of MapInfo functionality or provide a specialized capability.
- ▶ Extensions that make it possible to do more with MapInfo than it was originally intended to do.

Turnkey systems allow inexperienced users to move painlessly through standard procedures.

One example would be for a bank to routinely audit its loan applications and approvals and analyze them relative to demographic and economic patterns in the community, then print a report proving compliance with federal guidelines. The potential number of turnkey applications for vertical markets is unlimited—as varied as retail sales and scientific research.

MapBasic offers a tool to create specialized utilities that work with MapInfo. Some might be highly specific, for example accessing a particular type of

database over a network, while others might be very general, such as looking up ZIP codes in a CD-ROM based directory.

Utilities could also bring advanced GIS features to desktop mapping. These might include importing digital line graphs and digital elevation models as provided by the U.S. Geological Survey, or performing raster-to-vector conversion from Landsat or SPOT satellite photos to MapInfo objects.

Extensions to MapInfo could include custom symbol libraries, links to programs such as HyperCard, real-time map updates using Apple events and direct access to global-positioning system hardware.

Database programming languages have spawned a cottage industry of custom products and created a pool of professional programmers specializing in writing database applications.

MapBasic has the potential to do the same for desktop mapping. In this regard, MapBasic, like MapInfo, is a groundbreaking product.

— By G. Donald Bain

distance from existing objects. This can be used to determine, as an example, how many potential customers are within five miles of an intersection, near a certain highway, close to a state line or near an existing store. Buffers are permanent map objects and can be used with the Polygon search tool. Limited polygon overlay functions are also now available—new objects can be created from the union (but not the intersection) of existing

polygons. It also supports creation of multiple-polygon objects and objects with holes through them. The already powerful SQL subset supported by MapInfo's SQL Select command has been enhanced with specifically geographic tools. The Contains (and Contains Entire), Within (and Entirely Within) and Intersects operators allow a selection statement to take advantage of spatial information derived from maps. You can also use SQL Select to join tables (using a linking field), assemble new tables with information derived by calculation from one or more existing tables, and

See MapInfo, next page



This is the StreetInfo file for Alameda County, Calif., showing roads, railroads, water features, military bases and parks.

MapInfo

From previous page

aggregate data to get totals or averages.

The greatest enhancement to MapInfo, though, is the addition of a full-fledged programming language, MapBasic (see story, previous page).

Performance and ease of use.

Although MapInfo draws complex maps on the screen with impressive speed, perfor-

mance in certain other areas is distinctly sluggish — database searches and selections are particularly slow.

There is also a pause each time a window is opened or refreshed, made more disconcerting by absence of the standard watch cursor. However, most common procedures can be performed easily and efficiently with the product's good interface design. The graphics tools are intuitive and simple to use, and the layering scheme is logical.

In many cases the choice has been made to provide power rather than simplicity of use. For example, the Select command is modeled on mainframe-style SQL. Although intimidating at first, it helps prepare the user for the even more powerful SQL Select command.

Documentation has been vastly improved since MapInfo's original release. Overview, tutorial and reference manuals cover the program thoroughly. The basic package includes enough sample base maps and data files to

support the excellent tutorial and try out most program features.

There is extensive context-sensitive on-line help, supplemented by balloon help. Toll-free technical assistance is available at no charge for the first 90 days and for an annual fee thereafter. Given the complexity of the product, serious users will want to sign up. MapInfo also offers classes at different sites around the country.

Still needs work. The MapInfo program still has some weak spots. Although it is easy to turn a text file of coordinate pairs (such as latitude and longitude) into points on the map, there is no equivalent procedure for lines or polygons. You can generate summary statistics for any table or selection, but they cannot be copied or printed. Database tables are always shown in the order they were entered — an option to temporarily sort the records by one of the fields would be very useful.

Basic thematic mapping procedures could be simplified, and there should be some way to save mapping choices so a series of similar maps can be generated. More options for dividing data into ranges and assigning colors and symbols would be welcome. Although there is now an excellent selection of line types, the choice of symbols is still limited and poor. There should also be a way to automatically create a graphic scale bar that would remain accurate through zooming, panning and layout.

Like most other desktop mapping and GIS programs, MapInfo cannot draw true curved lines (it uses smoothed polylines rather than Bezier or spline curves). Similarly, although there are adequate drawing tools, there is no way to import a scanned image (such as a paper map or an air photo) to guide tracing. For these reasons, if no others, professional cartographers will probably continue to use illustration software such as Aldus FreeHand and Adobe Illustrator for their publication-quality maps.

Conclusions. Existing users of MapInfo will find the upgrade to Version 2.0 well worth the modest cost. Major features have been added, with the new presentation layout window especially welcome, and complete compatibility has been maintained. Those venturing into desktop mapping for the first time will find MapInfo 2.0 powerful but easy to use.

Sophisticated users looking for advanced mapping and GIS features will be impressed with its new projections, improved digitizing, powerful SQL commands, polygon analysis and buffering features. Support for Apple events and the new MapBasic programming language open up great possibilities for customized mapping applications.

MapInfo Corp. is at 200 Broadway, Troy, N.Y. 12180. Phone (518) 274-6000 or (800) 327-8627; fax (518) 274-6066. □

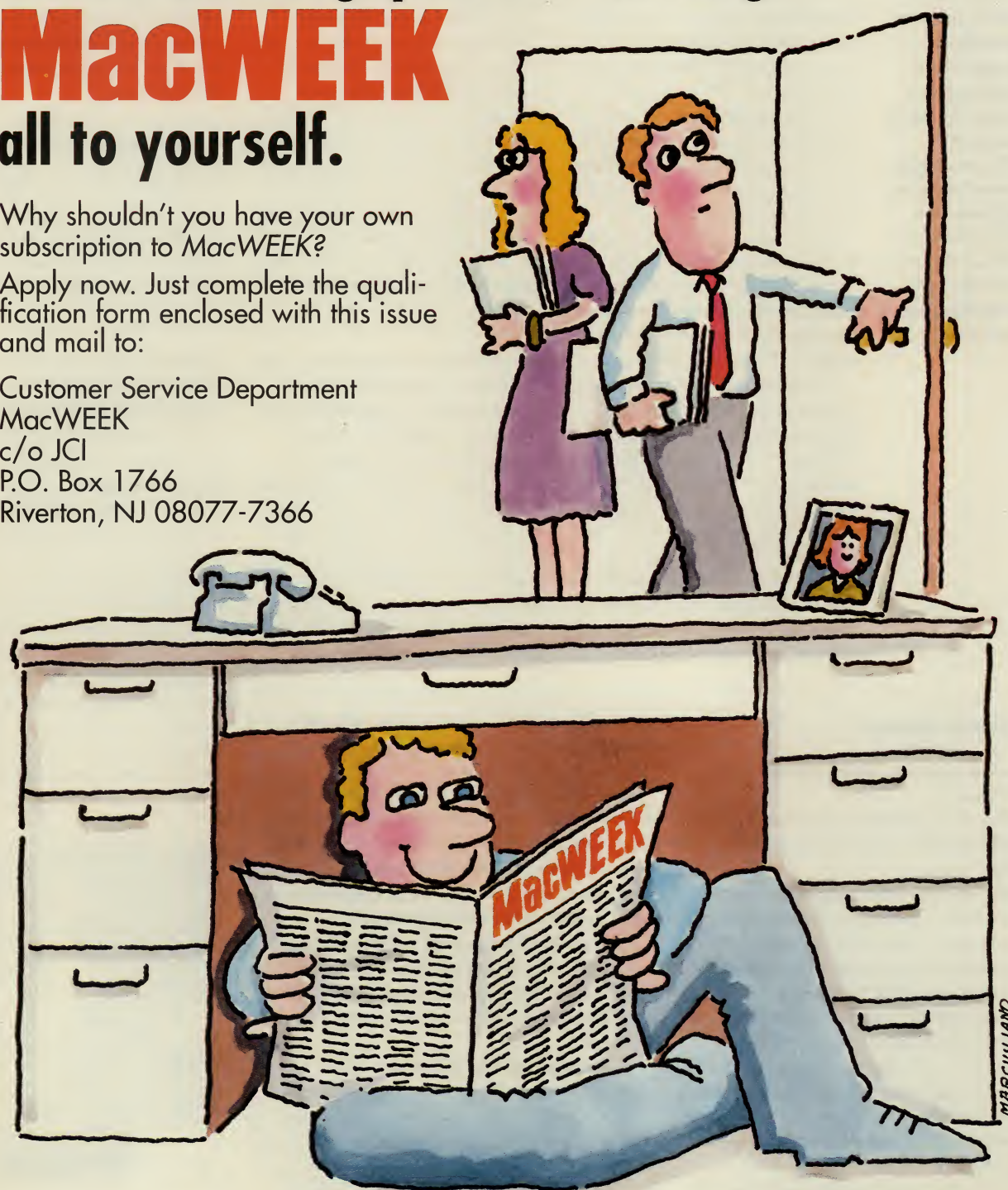
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SYSTEM 7 COMPATIBILITY

MapInfo 2.0

Balloon help	Yes
TrueType	Yes
Publish and subscribe	No
Apple events	Yes
32-bit addressing*	Yes

*According to vendor.



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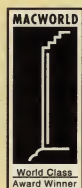
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HAMMER

New Kurta tablet has potential but doesn't handle pressure well

XGT/ADB sacrifices sensitivity for features

By Philip Bishop

Kurta Corp.'s XGT/ADB digitizing tablet joins those offered by Wacom Technology Corp. and CalComp Inc. for use in graphic arts applications.

The XGT/ADB shines in the many ways it can be configured, but in one key area — pressure sensitivity — it gives a lackluster performance.

The XGT/ADB is available in two sizes: 12 by 18 inches for \$900 and 12 by 12 inches for \$600. A cordless pressure-sensitive pen is not included with the tablet and costs an additional \$200. This places the XGT/ADB at \$95 less than Wacom's 12-inch-square serial-based tablet and pen and about twice the price of a similarly configured, 6-by-8-inch Wacom ArtZ.

score card

XGT/ADB

Kurta Corp.

List price: \$600*

Overall value ♦♦♦♦

The 12-inch-square Kurta XGT/ADB is a solidly constructed pressure-sensitive digitizing tablet that can be put to good use in several professional graphic arts settings. Its Template function, for example, can easily be adapted to page-layout or CAD duties. The tablet features 20 buttons that make it easy to scale the tablet to your monitor and perform other functions on the fly. As a pressure-sensitive device, however, the Kurta pen is somewhat awkward to use and lacks the responsiveness of those produced by Wacom, and changing the pen's batteries is problematic. If you want a pressure-sensitive tablet with a lot of features, however, the XGT/ADB is a good choice.

Performance ♦♦♦♦
Features ♦♦♦♦
Configuration ♦♦♦♦
Compatibility ♦♦♦♦
Documentation/support ♦♦♦♦

*Pressure-sensitive pen, \$200, required; 12-by-18-inch tablet, \$900; other pointing devices range from \$100 to \$200.

Four- and 16-button pucks and a nonpressure-sensitive pen are also available and range from \$100 to \$200.

The Kurta tablets have a thick plastic cover to place over documents for tracing or for covering macro template overlays.

The 12-inch-square tablet we tested was easy to set up. We simply inserted it in the Apple Desktop Bus chain between our keyboard and mouse using the two ADB connectors on the back of the tablet.

The XGT/ADB weighs 8 pounds, which makes it rather heavy if you want to work with it on your lap. On the other hand, the tablet has a solid, well-constructed feel on the desktop.

Beneficial buttons. Along the top edge of the tablet is the Logo Menu Strip, a row of 20 buttons that let you quickly change how a pointing device operates, scale the tablet to your monitor and play macros. Throughout our testing we found the Logo Menu Strip to be a very helpful feature. Double-clicking on the STD button, for example, scales the tablet to the total area of your monitor (or monitors). A single click on the ZIP button lets you access the full extent of your monitor via a 3-inch square in the center of the tablet, which is great for traveling large distances with small steps. Double-click on the ZIP button and you can move this active area to any location on the tablet you choose. Not only do the buttons of the Logo Menu Strip let you perform some of the functions found in Penworks, the tablet's driver and configuration control panel, they can also help bail you out of a tight spot: Clicking on the Alt and F3 buttons imposes the default settings on the tablet.

Apart from Penworks, the only other piece of software is a system extension called Wacom Emulator, which allows the XGT/ADB to emulate the pressure-sensitive tablets from Wacom. This capability has become increasingly important as graphics software vendors have settled on the Wacom as the standard tablet for pressure-sensitive applications.

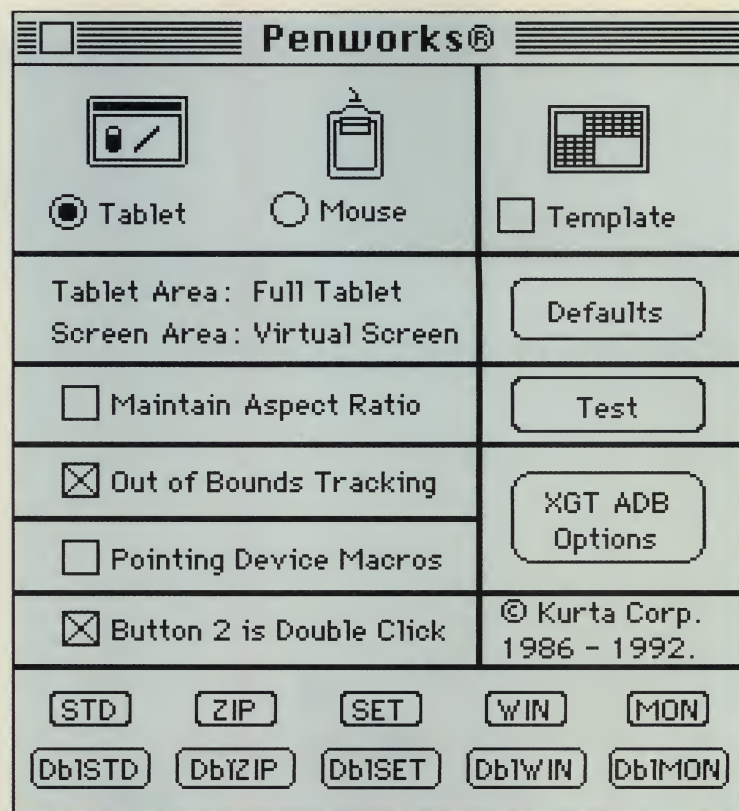
While we didn't find Penworks intuitive, once we got our bearings it was fairly easy to configure the XGT/ADB to function as a

tablet or as a mouse. The Mouse mode would be useful only to those who don't also have their mouse attached. The supplied Template mode, on the other hand, could prove of much more general usefulness. Templates are series of macros assigned to various locations on the tablet; clicking on a hot spot launches the corresponding macro. You create the macros using a program such as CE Software Inc.'s QuickKeys or Affinity Microsystems Ltd.'s Tempo II.

Battery blues. The pressure-sensitive pen weighs close to 1 ounce. While it is one of the more unwieldy pointing devices we have seen, we got used to it and didn't feel it impaired or obstructed our work.

We did experience a problem changing the three hearing aid-type batteries that power the pen. Located in the head of the pen, the batteries are surrounded by a thin sleeve of plastic. One of the batteries we replaced jammed on the edge of the plastic and couldn't be seated squarely. After several minutes of fiddling and cursing, we were finally forced to remove the plastic to insert the batteries. The pen showed no deterioration in performance as a result of this.

The pressure-sensitive pen has three inputs that perform navigational or illustration functions; in addition to the tip, there are two buttons on the barrel of the pen. With Penworks, you can assign one of the barrel buttons to be used solely for double-clicking, which



Kurta's XGT/ADB digitizing tablet can be configured as a tablet, mouse or template using the Penworks control panel. The bottom buttons let you set tablet and monitor scaling.

can speed file handling. When drawing or painting, pressing and holding either of the barrel buttons locks the pressure output at its current value (this output might be the shade of a color or the weight of a line). We succeeded in doing this only sporadically, although when we did, the value of such a function was obvious.

In general we found the Kurta pen was not as responsive as other pressure-sensitive pens we have tested, especially the ones produced by Wacom. Working on a Quadra 900 in Fractal Design Corp.'s Sketcher, for example, we had a hard time producing many gradations of shading using the charcoal tools.

The Kurta documentation was generally thorough and helpful. We particularly appreciated the discussions about tracing and other

practical applications of a digitizing tablet. Technical support proved knowledgeable and helpful.

Conclusions. Kurta's XGT/ADB is a solid digitizing tablet that can be put to good use in several professional graphic arts settings. Its Template function, for example, could easily be adapted to page layout. The tablet, with its strip of macro buttons, rates high for ease of scaling and other needs. But its pressure-sensitive pen, a key component for Macintosh artists, is somewhat awkward to use and lacks the responsiveness of those produced by Wacom, Kurta's chief competitor in this market.

Kurta Corp. is at 3007 E. Chambers St., Phoenix, Ariz. 85040. Phone (602) 276-5533 or (800) 445-8782, Ext. 337; fax (602) 276-7823.

Impressive tablets compared

Wacom Technology Corp.'s cordless, pressure-sensitive pens and drawing tablets have generated a small revolution in the way computer graphics programs are used. Kurta Corp. and the Digitizer Products Group of CalComp Inc. — Wacom's chief competitors — have seen the light. Both companies now offer their own cordless, pressure-sensitive tablet-and-pen products.

Wacom has responded to the challenge of competition by lowering its prices and continuing to innovate. Wacom's recently released ArtZ (see MacWEEK, March 22), a 6-by-8-inch tablet, is Wacom's first Apple Desktop Bus tablet, and at \$425 with a pen, it's the most aggressively priced Wacom ever. Wacom promises to bring to market a variety of tablets built around this new technology.

Wacom's ArtZ is missing some of the features found in the Kurta and CalComp units, and Wacom's prices are not

nearly so aggressive when it comes to its larger serial-based tablets.

For their part, however, Kurta and CalComp face the daunting challenge of producing a pressure-sensitive pen as light and responsive as Wacom's. In our experience, CalComp's pen proved easily breakable, and both the Kurta and CalComp offerings require batteries, which the Wacom pens do not have.

Kurta and CalComp could also learn by studying Wacom's impressive new driver software, which debuted with the ArtZ. Its customizable pressure curve and on-screen macros give the user instant access to a variety of controls.

In the field of pressure-sensitive tablets, vendor-supplied numbers such as data points per second have little weight compared with the subjective feel and performance of the unit. In this regard, the Wacom feels the best. And what is more, the price of this feeling is now a lot more agreeable. — By Philip Bishop

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Avid's new Media Suite Pro fast but needs some editing

The system lacks the degree of technical refinement and control required for creating institutional final videos.

By Sonja Schenk

Since 1989, when Avid Technology Inc. first introduced the Mac-based Media Composer, nonlinear video editing has steadily taken over high-end professional post-production.

Avid aims to repeat this success in the midrange corporate video market with Media Suite Pro. While Media Composer users ultimately generate an edit-decision list (EDL) for assembly of final film or video, Media Suite Pro is intended to put digital video on tape.

Media Suite Pro is aimed at corporate, educational, multimedia and industrial users. Features include real-time input and output, instant full-screen playback, four channels of audio, internal title and effects generation, and limited compatibility with Mac graphics files.

Although it provides many of the same functions as Media Composer, Media Suite Pro lacks the degree of technical refinement and control that users intent on broadcast-quality final product require. In bridging the gap between Mac-based desktop systems and analog video editors, Avid's hybrid is fast and easy to use but falls short of expectations in certain areas, particularly audio and graphics support.

Media Suite Pro clearly shows its high-end heritage in editing speed, but it compares poorly with programs such as Adobe Premiere when it comes to Mac-like multimedia integration (see story, next page).

Speed and hardware. The product's biggest selling point is speed, a result of an ambitious integration of software and hardware. For \$9,995, you get software, cables and four NuBus boards: Truevision Inc.'s NuVista+ video processor, Digidesign Inc.'s AudioMedia II audio processor, ATTO Technology Inc.'s SCSI-2 accelerator card and Avid's JPEG (Joint Photographic Experts Group)-compression board.

The system requires, but does not include, a Quadra 900 series or Mac IIx with at least 16 Mbytes of RAM, a 2-Gbyte SCSI-2 hard drive, one or more multisync monitors, and external speakers. Also, to take advantage of accessory programs such as Avid's optional MediaLog and remote-control functions, a Sony serial-protocol deck is required.

The hardware is identical to that

used in the Media Composer, but a copy-protection scheme prevents the Media Composer software from being used unless the hardware is "blessed" by Avid. According to Avid, upgrading from Media Suite Pro to Media Composer is not an option.

Media Suite Pro's NuBus boards can be used with other applications, although Media Suite Pro has trouble with background applications and processes, particularly AppleTalk.

Input. The digitizing process is simple and takes place in real time. Only one video deck is needed for both play and record, which is a nice feature. Media Suite Pro uses Avid's JPEG compression, which plays at 30 frames per second but captures only one field per frame, or half the resolution of NTSC (television) video. The resulting image is acceptable for low-profile final products, such as training videos, but is not broadcast-quality.

Each 2-Gbyte drive will handle about 25 minutes of source material, enough for a two-minute project with a generous 12-to-1 shooting ratio.

If the source deck supports SMPTE timecode, Media Suite Pro will read it automatically. Otherwise, the system assigns its own timecode to the digitized clip starting at 0:00:00:00, which it continues to refer to no matter where the clip is used. As long as the original clip remains on the hard drive, timecoded source material is not



Most of the editing in Media Suite Pro is done in these windows. The Edit window (left) lets you preview and edit a clip and mark in and out points. Preview windows (right) let you view a clip. Dragging a clip to the Timeline (bottom) places the video in the sequence.

necessary unless the project is intended to go on-line.

The Video tool allows adjustment of video levels during input. Hue and saturation can be boosted or pulled out for a monochrome image, and the gain can be adjusted to brighten or tone down a shot. A vectorscope and waveform monitor are available for calibrating, and these adjustments can be saved for future capture sessions.

Media Suite Pro exports PICT, PICS and QuickTime files and can import PICT, PICS, Chyron Corp.'s Chyron and Kodak Photo CD files. Media Suite Pro should also be able to import both QuickTime and sequential PICT files, and Avid said that the next version will have this capability. (Avid recently acquired DiVA Corp., whose experience with QuickTime editing may help with future upgrades.)

Audio input and editing. The Audio tool provides an LED

display and allows for adjustment of levels during input. Noticeably absent here is the capacity for equalization or filtering. Once input, the levels of the digitized audio can be diminished within Media Suite Pro, but they cannot be boosted. Performing any of these functions requires recapturing the audio — a potential problem when working without timecode — or using an external application to edit the sound files.

Audio files saved in Digidesign's SoundDesigner II format can be imported into Media Suite Pro, although they must be single channel and saved at 44.1 kHz. Media Suite Pro currently does not handle AIFF (Audio Interchange File Format) files, although Avid said the next version will both import and export this format as well.

Audio is one of the most underdeveloped parts of Media Suite Pro. Although it can be edited with the same precision as the video track, the level of control is not suited to a

score card

Media Suite Pro

Avid Technology Inc.
Version tested: 1.0
List price: \$9,995*
Overall value ♦♦

Media Suite Pro is a nonlinear video-editing solution for institutional users. Avid's integration of software and hardware is good, and the editing speed and efficiency of the system are impressive. Avid has bundled a series of components that together far outstrip anything QuickTime has offered so far. On the downside, the program exhibits poor integration with the outside world, a number of serious bugs and a questionable policy regarding upward mobility. As a video editor, it is very good; as a Mac multimedia package, it is a poor first attempt.

Performance ♦♦

Features ♦♦

Configuration ♦♦♦

Compatibility ♦♦

Documentation/support ♦♦♦♦

*Requires a Mac IIx or Quadra 900 series machine, video hardware and peripherals.

Composer goes Pro: Hollywood tool gets industrial finish

Avid Technology Inc.'s Media Composer has become one of the most prominent examples of digital nonlinear editing systems in the world of traditional video post-production. The reason for its widespread acceptance in the film and broadcast world is the speed and ease it brings to off-line editing. However, Media Composer's role is designed, ultimately, to go on-line via edit-decision lists (EDLs).

(Off-line editing is like making a rough draft. Taking your edits on-line means you are creating the final product.)

The primary difference between Composer and Avid's low-end Media Suite Pro is that Media Suite Pro is designed to produce the final product by "printing" digital video to tape. Media Suite Pro actually incorporates the best of the JPEG (Joint Photographic Experts Group) hardware Avid uses in the top-of-the-line \$85,000 Media Composer. Unbundled Composer systems with less robust hardware, such as the Model 210, are available for as little as \$15,000, minus the required Macintosh and video hardware. Ultimately, the difference between Media Suite Pro and the high-end Com-

poser is in the software and how much the target user is willing to pay.

Because Media Suite Pro's final output is pretty good for institutional video uses — including training, promotions, kiosks, presentations and multimedia — Avid argues that corporate users won't need to go "on-line." However, corporate media departments sometimes do need broadcast-quality results.

Media Suite Pro's project files can be read by Media Composer 4.5 or later. Post-production houses equipped with one of these systems can output in a matter of minutes an EDL from a disk containing your edited project sequence. This may ease the concerns of producers who don't want to be stuck with a dead-end system.

On the other hand, if you need to go on-line on a regular basis but the quality of your digital output is not important, the \$15,000 Composer 210 may be a better buy if you can swallow the price. It uses more-efficient (and lower-quality) AVR Level 1 compression and can fit five times as much video on disk. It also outputs EDLs in a variety of formats. — By Sonja Schenk

polished final product. To Avid's credit, the results of our test mix-downs were quite favorable, but the main problem was that we were uncomfortably left out of the mix-down process.

One audio feature, WordPlot, provides a graphic display of sounds present on the Timeline. However, its graphic image never seemed to correspond to actual voices or noises, and it required more time to redraw than the feature merits.

Editing. Editing is arranged somewhat like an analog source and record deck setup. Bins, the equivalent of folders, contain the captured clips that can be opened for viewing by double-clicking. Edited sequences are created by dragging and dropping clips from the Bins into the Timeline window, which shows a linear, chronological view of the material. A sequence can then be viewed within the Program window, which serves as a playback or record deck.

Clips can be dragged and dropped into the Timeline individually or as a group. Unless an In Point is specified, they will be automatically positioned after the Timeline Position Indicator. More-controlled assembly can be made by setting Mark In and Mark Out points either in the Timeline window, the Program window or within the clip's pop-up window. To remove portions of a sequence, you can Lift, which leaves a gap and thereby maintains sync, or Extract, which removes the selected portion and closes the empty space. You can reassign the function keys to customize your setup.

Once a sequence is built, the cuts can be fine-tuned in Trim mode, one of Media Suite Pro's best features. It allows for instant frame-accurate changes of each edit by simply using the arrow keys.

Media Suite Pro offers an impres-

sive 32 levels of Undo, freeing the user to experiment. These features, along with the unlimited copying of footage and instant playback, contribute the most to the timesaving aspect of Avid's approach.

Organizational tools. The potential for clutter and confusion is awesome. Fortunately, Avid provides several options for designing your own setup.

Corporate video professionals should keep their eyes on this system, but Avid needs to squash the bugs.

In Frame view, picture icons can be dragged around in the window to form a storyboard or other arrangement. Custom view provides a spreadsheetlike text view with statistical columns such as Duration, and Mark In and Mark Out points. It is possible to create your own text descriptions or comments regarding each clip.

Select Media in Use is particularly useful in getting rid of extraneous material on the Media Drive. It highlights all related files for a given sequence or clip. This command allows you to delete files without destroying those necessary for a sequence.

Effects and titles. Users coming from analog video will be surprised at the ease and speed at which effects can be performed. Media Suite Pro can perform dissolves and freeze frames of any length and offers 16 patterns for

wipes and 16 patterns for digital video effects, although these are of the most basic variety.

The internal titling tool offers only the minimum: anti-aliasing, still titles, plain graphics and alpha channels. Worse yet, there seem to be some major, inexplicable bugs in Version 1.0. Selecting certain fonts caused the program to crash. This occurred both when using TrueType and Type 1 fonts. Avid said it has not encountered this problem.

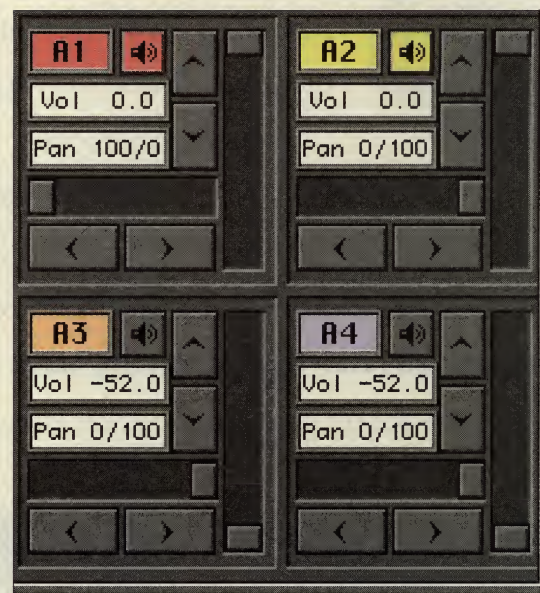
Final product. Once a project is finished, it can be simply printed to tape in real time. Avid's decompressed video image is surprisingly good and easily acceptable for most institutional uses.

For those who desire a higher-quality output, Media Suite Pro does not export an EDL.

However, if your source material is timecoded, you can copy the sequence to a floppy and take it, along with your source tapes, to an on-line suite equipped with Media Composer Version 4.5, which can create an EDL (see story, previous page).

Promises, promises. The sheer number of bugs leads us to believe that Avid shipped this product before it was ready. Along with the Title tool, printing repeatedly crashed the program. Although you should be able to print various windows and frames, this feature worked only intermittently during our test.

Selecting Custom Sort causes the program to crash, as does selecting Help from the Archive dialog box. In addition, Save Settings in the Video tool and Cancel in the Go to Capture Mode dialog box both produced irrelevant error messages.



Audio for each of the four Media Suite Pro tracks is controlled through this panel. However, the audio controls are not particularly good for a product designed to produce final output.

Learning curve. In addition to a User Manual and Tutorial Guide, a good 30-minute instructional video and an excellent on-line HyperCard tutorial stack are also included.

Avid seems to be hedging its bets that somewhere within all this material and technical support, any question you have will be answered, and it's probably right. However, finding the answer was not always as easy as we would have hoped.

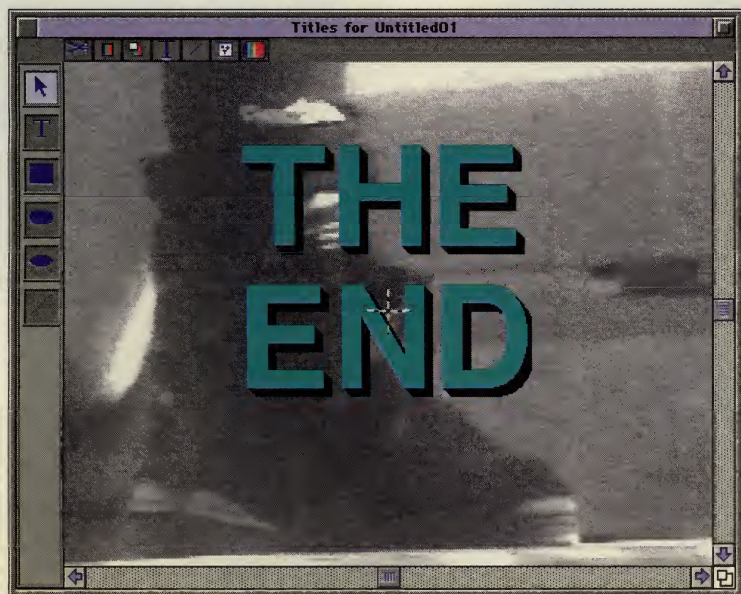
Conclusions. Media Suite Pro is a valiant attempt at crossing a lot of boundaries. It won't impress everyone on all issues, but it doesn't necessarily fail either. The much-touted timesaving factor of non-linear video editing is more true for Media Suite Pro than any other product currently offered, and the level of control within the cuts-only editing functions is very good.

The secondary functions needed to create a polished, finished product — working with audio, graphics and special effects — leave a lot to be desired. Many significantly less-expensive programs, such as Adobe Premiere, surpass Media Suite Pro in this regard.

A company with graphics- and effects-laden projects may do better with a QuickTime application and the hardware needed to go to tape, while Media Suite Pro will be more appreciated by those with editing-intensive work.

Corporate video professionals should keep their eyes on this system, but Avid needs to add some features and squash the bugs before Media Suite Pro fulfills its promises.

Avid Technology Inc. is at Metropolitan Technology Park, 1 Park West, Tewksbury, Mass. 01876. Phone (508) 640-6789; fax (508) 640-1366. □



Media Suite Pro's title generator offers only a minimum set of features. You can create still titles and basic graphics, but in our tests, choosing a font crashed the system.

Media Suite Pro cuts to the chase

Media Suite Pro is faster than QuickTime's best hardware-and-software combination. Adobe Premiere 2.0 with SuperMac Technology Inc.'s \$5,999 DigitalFilm is no match for Avid's \$9,995 Media Suite Pro.

When we reviewed DigitalFilm with Premiere (see MacWEEK, Jan. 18), we found a variety of problems. DigitalFilm proved incapable of sustained 30-frame-per-second output at NTSC resolution, even when displaying only one field (as does Media Suite Pro). It also produces significantly lower quality than the Avid compression.

Equally problematic is the lack of integration between Premiere and the DigitalFilm hardware. Because Media Suite Pro has a direct line of communication with its various hardware components, playback of clips and viewing edits is in real time and full screen. Premiere, in contrast, completely bypasses the DigitalFilm hardware at the preview stage, so it's impossible to see your edits in detail until you compile them as a new QuickTime movie, which can sometimes take hours. Editors trying to make a seamless cut — for example, matching movement between two different clips with little margin for error — need to view their edits instantly and repeatedly. With Premiere, such fine-tuning currently is impractical.

However, while QuickTime editors are slowpokes, they

put Avid to shame in the graphics department. Media Suite Pro's software offerings are limited to dissolves, freeze frames, 16 wipe patterns and 16 minimal digital effects. It offers a barely functional still-title generator and the capability of overlaying PICT and PICS graphics with alpha channels.

Premiere, meanwhile, boasts animated clips and titles; dozens of filter effects (with support for third-party plug-ins); and virtually every type of wipe, dissolve and digital effect you can ask for. It supports studio effects such as chroma keying and will import a host of graphics created in other packages, including QuickTime animations, and smoothly integrate them into your production. Audio can be mixed up and down at any point in any track.

Premiere's support of motion effects, for example, stretching five seconds of video into 10, is also beyond the range of Avid's tools. More importantly, Avid's digital effects take just as long to compile as Premiere's.

While the Avid interface will be familiar to those in the technical world of video editing, users at home on the Mac will definitely feel more comfortable using Premiere, which offers cut-and-paste and other standard Mac functions. While Avid's systems are faster, the company has a lot of catching up to do in interface design and multimedia features. — By Sonja Schenk



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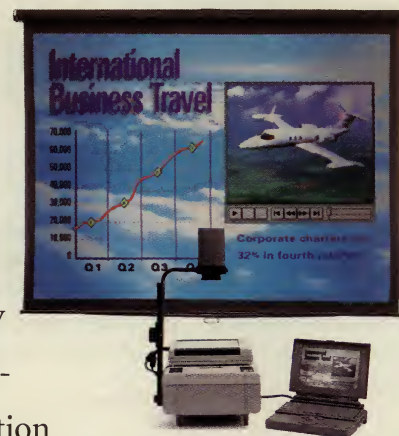
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Mac acquisition boards reveal vital image data

DSP and advanced frame-grabbing technology provide more ways to uncover important video, image and sound information.

By Larry Stevens

Since the goal of all Mac-based data acquisition is to convert analog signals or images, usually of a scientific nature, to digital data, the most important hardware in a data-acquisition system is the analog-to-digital input-output board.

Certainly analog-to-digital NuBus boards are still the most common data-acquisition devices. However, new technologies, new implementations for frame-grabbers as well as new software-hardware bundles have expanded the number of choices.

Digital signal processors.

The most promising development, brought to the Mac world a few years back by Spectral Innovations Inc., are analog-to-digital boards with built-in digital signal processors (DSPs). The DSP provides enough on-board processing that the Mac compares favorably to minicomputers or workstations for some of the same tasks.

"In the past, we used a VAX for all our processing," said Gary Kenworthy, an engineer at Signal Science Inc. of Santa Clara, Calif. "But [Digital Equipment Corp.'s] system was so difficult, only our engineering staff could use it." Kenworthy's company provides communications and signal-processing research services for the military and military contractors.

Signal Science reluctantly switched to Macs, fully expecting to sacrifice power in return for ease of

use. However, Kenworthy said he learned that the Mac, combined with [Spectral Innovations'] MacDSP MB/A board, matches the power of the company's VAX system.

Kenworthy is quick to add that his company didn't have a top-of-the-line VAX, which, he said, may outperform his present system — but not by much. He estimated that the DSP card allows his Mac to perform 10 times faster than it did with a simple analog-to-digital board.

The power of Spectral Innovations' MacDSP MB/A comes from its two on-board processors, an FPU (floating-point unit) and the AT&T DSP 32C, along with a Motorola 68000 chip.

National Instruments Corp. also has a Mac DSP board. Its NB-DSP2300 is based on Texas Instruments Inc.'s TMS320C30 chip.

Kenworthy said Signal Science's Mac-based system has improved the quality of service it can offer clients. In the past, clients would request data, and Signal Science engineers would capture the information on its DEC system and generate the needed report. "Now we can place the clients in front of the Mac and let them find the data they need," Kenworthy said. "It's more efficient for our clients and for us."

Image analysis. With the introduction of more-powerful Macs and frame-grabber boards, image acquisition is becoming an



RICK FRIEDMAN/BLACK STAR

Gary Tearney, research engineer for Massachusetts General Hospital, analyzes a burn sample image created with Perceptics' PixelBuffer and Signal Analytics' IPLab Spectrum software.

important Macintosh-based data-acquisition activity.

Gary Tearney, a research engineer at Massachusetts General Hospital in Boston, uses Pixel-Buffer, a high-end frame-grabber from Perceptics Corp. He bought the board from Signal Analytics Corp., bundled with the latter's IPLab Spectrum software, to study the severity of burn scars.

Tearney injects a fluorescent dye in the patient's blood and then uses National Instruments' LabView to control special cameras to photograph the scarred area. Live skin, which receives blood and, thus, the dye, appears in the photograph as a different color than dead skin.

Next, Tearney uses IPLab to subtract the pixels representing the dyed area, thus providing an exact "map" of the scarred area.

Tearney said that the project is divided into two phases. The first (which he is in right now) provides data on the thickness of scar tissue and the effects of various kinds of burns.

The second phase will provide real-time support for surgeons working on burn patients. "That'll be when the Mac will be especially important," Tearney said. "Surgeons are very competent in what they do, but they're often not sophisticated with computers," he said. "On the Mac, we can create a pretty simple interface using LabView and Apple events so that any surgeon can use it without much training."

Standard analog-to-digital boards. Of course, most data-acquisition projects use standard I/O boards that contain analog-to-digital and digital-to-analog slots. National Instruments has more than 30 boards and configurations that support NuBus, SCSI and RS-232 interfaces to the Mac; Strawberry Tree Inc. makes a number of NuBus boards; and GW Instruments Inc. sells serial, NuBus and SCSI devices (see story, left).

See Boards, Page 62

Some advice on choosing an analog-to-digital I/O board

According to Andrew Davis, a Southborough, Mass., consultant specializing in Mac-based data-acquisition applications, there are five considerations when selecting an analog-to-digital data-acquisition board.

► How many input ports do you need?

The answer may range from two inputs for processing stereo audio signals to hundreds of inputs for industrial-control applications, such as one that measures temperature, pressure, flow and acidity from 30 locations.

► How often will the board measure the signal? Are you measuring once or 1 million times per second? According to Davis, there

are devices that do either of the two extremes as well as what's in between (most devices can't handle both extremes).

► What environment will the board be operating in? Boards from different vendors have a wide range of tolerances to temperature, humidity, dust and even noise.

► Make sure you have enough mass storage to hold the data you need to collect. It does no good to spend money for a board that can collect more data than can reasonably be stored on the available drives.

Davis said that as a rule of thumb, users should figure their hard drive will need

about two bytes per sample. So, for example, if someone is planning to capture 32 signals at 10,000 samples per second each, they would use 640 Kbytes of hard disk space every second.

► Finally, how much programming are the users willing and able to do themselves? Those companies with programmers on staff can buy boards and create their own programs in C or other languages.

However, if you don't have someone on staff who can handle this task, you should consider buying bundled hardware-software systems. — By Larry Stevens

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Boards

From Page 59

While I/O boards are relatively standard, bundled software-hardware packages allow them to perform special functions.

For example, John Davis, associate professor of exercise and health sciences at Alma College in Alma, Mich., uses a data-acquisition system specialized for life sciences from Biopac Systems Inc.

Davis uses Biopac's MP100 workstation in

the human histology laboratory. The system measures muscle activity in response to various stimuli.

Before buying the MP100 workstation, Davis relied on a chart writer, which produced long rolls of paper charts. "[The older method] would give us all the data we needed," Davis said. "But before we could do anything with the data, we had to spend two or three hours entering it into a computer."

However, this is not to say that there are

no disadvantages with the new system. For example, using it Davis can see only one screen of data at a time. With the paper-chart method, on the other hand, he and his colleagues were able to tack the paper along a wall and see the entire series of muscle events simultaneously.

Sound acquisition. GW Instruments' SoundScope is a bundle consisting of sound data-acquisition hardware and data-analysis

software. Howard Nusbaum, director of the speech laboratory at the University of Chicago, uses it to categorize human speech sound. Eventually, the research will help scientists to develop better hearing aids and computer engineers to develop speech-recognition systems.

Nusbaum's lab contains VAXes, which are used to sample more than 20 utterances at a

The research will help scientists to develop better hearing aids and computer engineers to develop speech-recognition systems.

time, and SoundScope-equipped Macs, which are used for less complex tasks. "We can get up and running on the Mac much quicker than we can with the DEC system," he said. "So we'll use it when it is reasonable, in terms of the number of samples we're working with."

For the foreseeable future, the Mac will have to share data-acquisition responsibilities with larger machines. However, the advent of newer devices, more-powerful Macs and innovative software-hardware systems will allow more companies to switch at least some of their data-acquisition responsibilities to Macs already in place. □

Product Info

BIOPAC SYSTEMS INC.

MP100 workstation: \$2,995

275 S. Orange Ave., Suite E, Goleta, Calif. 93117
Phone (805) 967-6615; fax (805) 967-6043

GW INSTRUMENTS INC.

SoundScope/8: \$1,490; **SoundScope/12:** \$3,490;
SoundScope/16: \$4,990

35 Medford St., Somerville, Mass. 02143
Phone (617) 625-4096; fax (617) 625-1322

NATIONAL INSTRUMENTS CORP.

NB-DSP2300: \$3,995 to \$6,990;

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PERCEPTICS CORP.

PixelBuffer: \$1,995

725 Pellissippi Parkway, Knoxville, Tenn. 37932
Phone (615) 966-9200; fax (615) 966-9330

SIGNAL ANALYTICS CORP.

IPLab Spectrum: \$1,000

440 Maple Ave. E., Suite 201, Vienna, Va. 22187
Phone (703) 281-3277; fax (703) 281-2509

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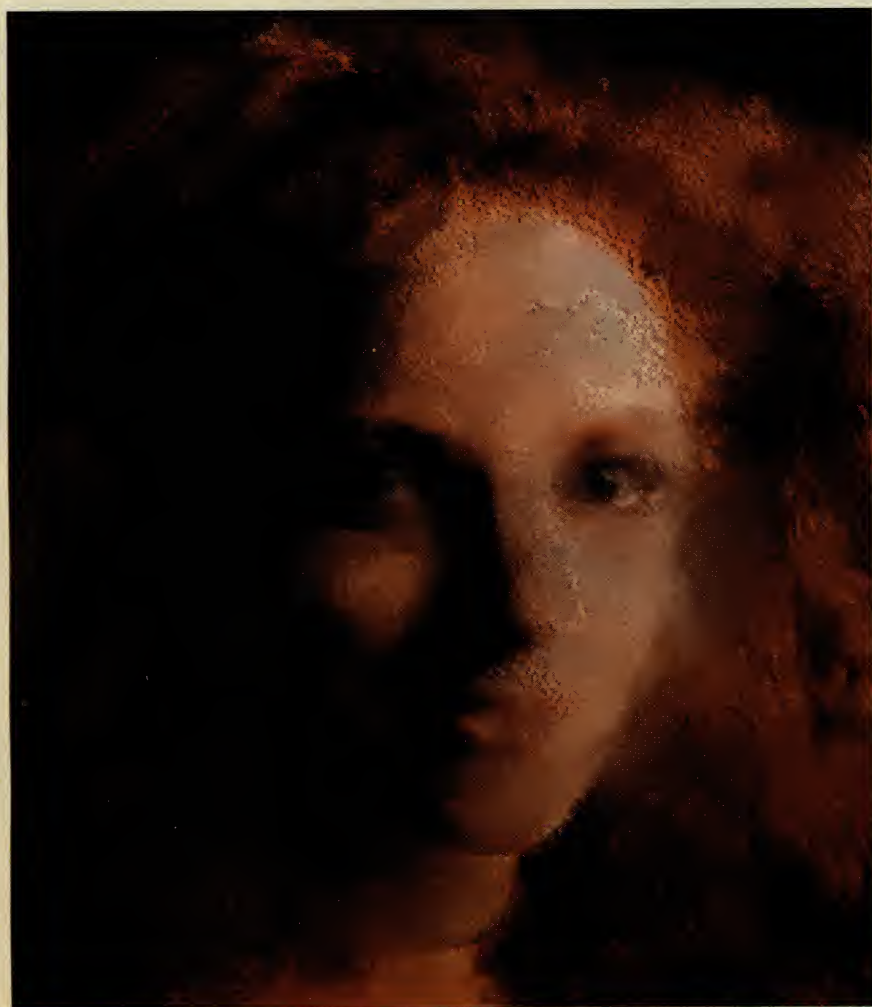
MacDSP MB/A: \$3,495 to \$4,995

1885 Lundy Ave., Suite 208, San Jose, Calif. 95131
Phone (408) 955-0366; fax (408) 955-0370

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GORDON STUDER

MacInTouch RIC FORD

Corralling a new herd of bugs and updates

This week we round up a collection of little items, including Mike O'Connor's EasyPlay shareware application and more on Finder updating.

BUGS & TIPS

Playback machine. For the small price of a \$20 shareware fee and 150 Kbytes of disk space, Mike O'Connor's EasyPlay looks like a good bet for PowerBook owners and people exploring QuickTime on a tight budget.

The first release of EasyPlay provided flexible movie playback and cataloging, plus support for Apple events and UserLand Software Inc.'s Frontier scripting system (see MacWEEK, July 27, 1992).

Version 2.0 adds capabilities for displaying and cataloging PICT files, as well as color printing.

With Apple Photo Access and QuickTime 1.5 installed, EasyPlay can open images from Kodak Photo CD discs (see MacWEEK, Jan. 4). The program also handles PICT

files compressed with QuickTime's JPEG (Joint Photographic Experts Group) routines, and it can resize images to fit the screen comfortably.

EasyPlay makes an excellent alternative to Apple's TeachText for viewing images, but you'll need other applications for editing.

O'Connor also produced a CD-ROM of public-domain Betty Boop cartoons in QuickTime movie format, and for a limited time, he is sending copies to people who register for EasyPlay.

On ZiffNet/Mac, EasyView is file EZPLAY.SEA in the Applications library at GO ZMC: DOWNTech.

Turning tables. Support for tables in a word processor is a powerful aid for formatting and presenting many kinds of information,

but problems arise in transferring the tables to non-Mac platforms.

Microsoft Corp. combines a strong table feature in Word 5 with a little-known option that makes transfers to foreign systems quick and easy.

In Word 5, the Save As dialog offers a file-type choice called Text with Layout. This option automatically creates tables in plain ASCII text that mirror their layouts in Word. Even multicolumn tables with cells that wrap onto several lines are formatted in a neat, readable way by the converter.

The feature is ideal for creating text-only documents that will be distributed among multiple platforms across a network.

Finder update. In the Jan. 11 column about how the Finder misrepresents file-modification times, I made a timing error, too. As several readers pointed out, the problem existed prior to Finder 7.

An open window sorted by date in Finder 6 can also misrepresent the modification order of files until the window is closed and reopened.

The problem is worse in Finder 7 only because Finder 7 presents a more explicit dialog when you replace a file with another one of the same name, and this dialog is sometimes erroneous.

Reader Kim Hunter noted that the various elements of a list view — name, date, sort position and size — are updated on different schedules. He also found that Show Folder Sizes in the Views control panel has some strange effects on how the size display is updated.

Another annoyance Hunter observed is the Finder's inability to copy a high-density floppy all at once in a single disk drive, even when there are megabytes of memory free. Windows apparently has no trouble doing this.

New Now update. Now Software Inc. has released additional patches for its Now Utilities package (see MacWEEK, Nov. 16, 1992). Version 4.0.1p updates Now Toolbox and Super Boomerang.

Super Boomerang's hierarchical menus should now work more reliably, especially on new Mac models, such as Performas, Duos and the Iix. The update also addresses compatibility problems with Super Boomerang's auto-relaunch feature.

Now Toolbox got better support for AppleShare and a fix that permits the use of multiple work sets.

On ZiffNet/Mac, the updates are available in Library 13 (Demos and Updaters) at location ZMC: DOWNTech. File NU401.SEA includes both 4.0.1 and 4.0.1p fixes, NU401P.SIT contains the 4.0.1p fixes if you are already at Version

Ask David Ramsey

Centris may need math tutor

Q. How can I add a math coprocessor to my Mac Centris 610?

A. You can't add a 68881 or 68882 math coprocessor chip to the Centris 610; there's no socket for one, and it wouldn't work with the 68LC040 CPU, anyway. What you can do is replace the "mathless" 68LC040 with a standard 68040 chip. The 68LC040 is socketed, so it's simply a matter of carefully replacing it.

68040s aren't commonly available parts, but you can get one for \$375 from Sonnet Technologies Inc. at (800) 945-3668. (You'll have to buy a 25-MHz 68040, even though the Centris 610 runs at 20 MHz.)

Q. I've heard that the floating-point math functions built into the 68040 don't have the full capability of the 68881/882. Is that so?

A. True enough. Just as the MMU (memory management unit) built into the 68030 is a functional subset of the separate 68851 PMMU (paged memory management unit) chip, the FPU (floating-point unit) in the 68040 doesn't have all the functions of the separate 68882 FPU chip.

Most of the missing functions are transcendental (logarithmical and trigonometric functions). Some CAD programs ran slower on the Quadras when they were first introduced, but they've been revised to deal with the '040.

Q. I want to add video-out capability to my PowerBook 170. Are external SCSI monitor setups good or bad?

A. Both. The big advantages to a SCSI monitor are that it doesn't require you to open your PowerBook and that one such system can easily be shared among several computers. The disadvantages are performance and compatibility.

SCSI monitors use an extension to patch QuickDraw so that graphics operations are converted into commands that the external SCSI box receives and interprets. This overhead can cause significant slowdowns with software that moves large amounts of data to the screen — games, animation and QuickTime, for example — and programs that bypass QuickDraw and write directly to screen memory probably won't work at all.

Please send questions to David Ramsey on CompuServe: 76702,335 or to Ask David Ramsey, c/o MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105.

4.0.1, and 401CHG.SIT documents the changes.

Now Software Inc. is at 520 S.W. Harrison, Suite 435, Portland, Ore. 97201. Phone (503) 274-2800 or (800) 237-3611; fax (503) 274-0670.

Fried fuses. Reader Mark Hodges warned of a PowerBook pitfall associated with defective batteries.

It seems that starting up a PowerBook with a dead battery can blow a fuse on the motherboard, and the PowerBook will not run from batteries afterward unless the fuse is replaced.

Hodges said that his company, Northwest Consulting, has seen a number of defective batteries, which blew fuses on PowerBook 14x and 170 models. □

Comments on MacInTouch are welcome at 7 Parmenter Ave., Maynard, Mass. 01754. Phone (508) 897-2621. Address electronic mail to RICFORD on AppleLink or MCI Mail; to 72511.44 on CompuServe; or on the Internet to 72511.44@compuserve.com. Join us on-line in the MacWEEK Forum at location ZMC:MACWEEK on CompuServe or ZiffNet/Mac.

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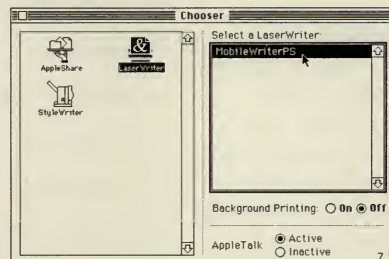


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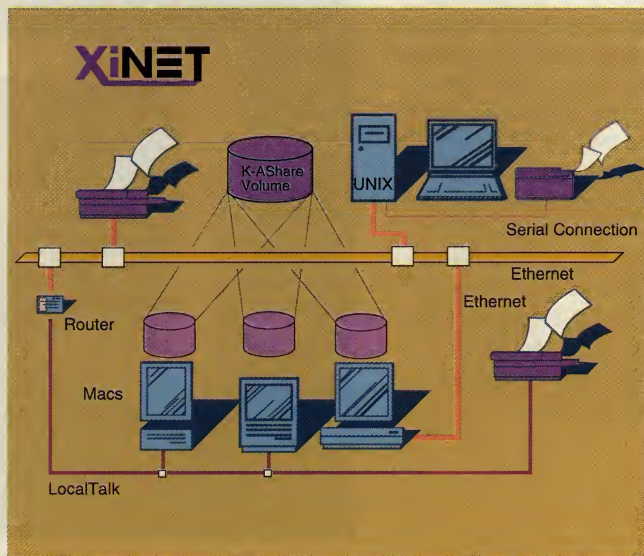
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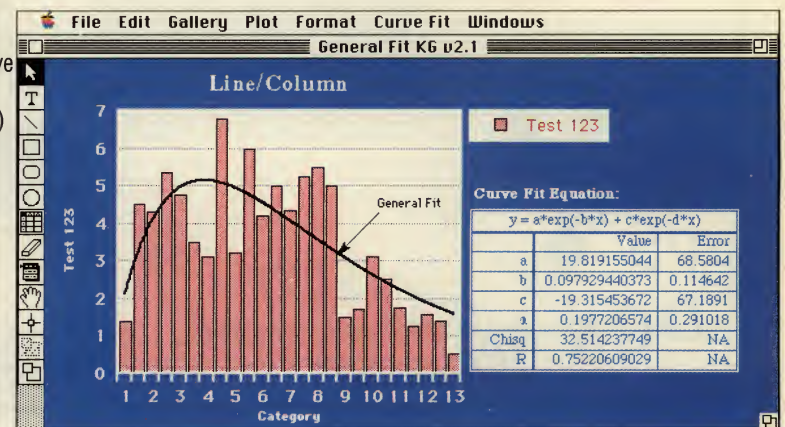
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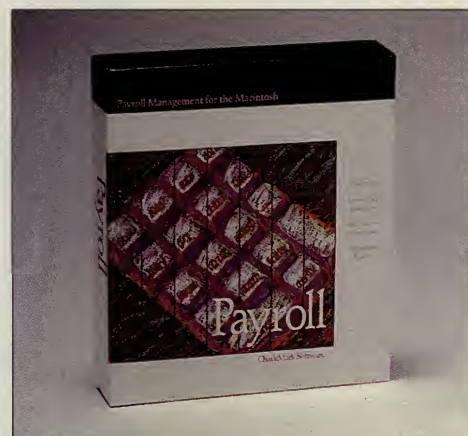


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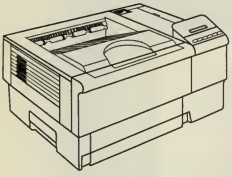
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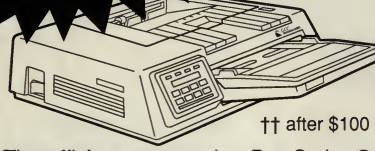
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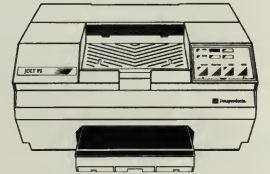
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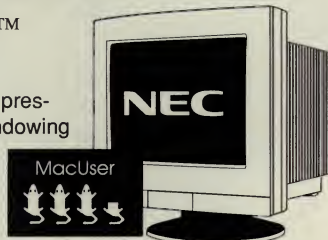
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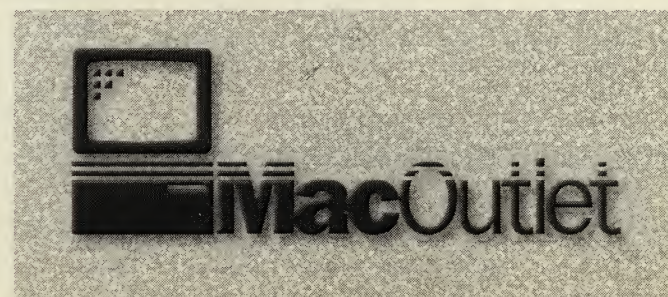
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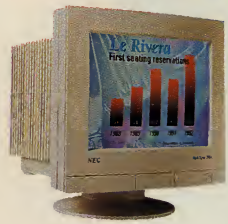
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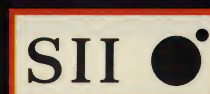
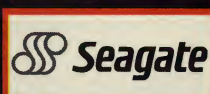
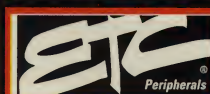
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Quantum

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120mb	GO120	17ms	120mb	\$389	\$489
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85mb	ELS85	17ms	82mb	\$199	\$259
127mb	ELS127	17ms	124mb	\$269	\$329
170mb	ELS170	17ms	160mb	\$299	\$359
LPS SERIES (3.5" LOW PROFILE)					
105mb	LPS105	11ms	100mb	\$229	\$289
120mb	LPS120	10ms	116mb	\$269	\$329
240mb	LPS240	10ms	234mb	\$369	\$429
525mb	LPS525	10ms	500mb	\$899	\$959
PRODRIVE SERIES (3.5" HALF HEIGHT)					
425mb	PRO425	9ms	406mb	\$850	\$910
700mb	PRO700	10ms	670mb	\$1195	\$1255
1.0GIG	PRO1050	10ms	1001mb	\$1329	\$1389
1.2GIG	PRO1225	10ms	1165mb	\$1479	\$1539

GO•Drives carry a ONE Year Warranty. ELS drives, LPS drives, PRO drives carry a TWO Year Warranty.



Maxtor

6300 RPM!!*

Unformatted Capacity	Model	Access Time	Actual MAC Capacity	Internal	External
XT SERIES (3.5" LOW PROFILE)					
120mb	7120S	15ms	121mb	\$225	\$285
207mb	7213S	15ms	202mb	\$329	\$389
LXT & MXT SERIES (3.5" HALF HEIGHT)					
330mb	LXT-340	15ms	324mb	\$579	\$639
535mb*	MXT-535	8.5ms	521mb	\$949	\$1009
1240mb*	MXT-1240	8.5ms	1150mb	\$1499	\$1559
PANTHER SERIES (5.25" FULL HEIGHT)					
1.2GIG	PO-12S	13ms	997mb	\$1295	\$1395
1.7GIG	P1-17S	13ms	1433mb	\$1595	\$1695

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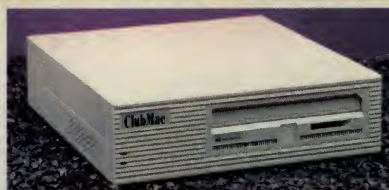
Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
213mb*	MK2224FB	2.5" Low Profile	12ms	207mb	\$559	\$659
1230mb	MK538FB	3.5" Half Height	12ms	1185mb	\$1395	\$1455

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**FIVE YEAR
WARRANTY**

FUJITSU

Unformatted Capacity	Model	Access Time	Actual MAC Capacity	Internal	External
425mb	M2623FA	9ms	405mb	\$859	\$919
520mb	M2624FA	9ms	496mb	\$899	\$959
1.1GIG	M2694	8.5ms	995mb	\$1695	\$1755
1.2GIG	M2266	14.5ms	1029mb	\$1375	\$1475
2.0GIG	M2652	14.5ms	1665mb	\$2279	\$2379
2.4GIG	M2654	11.5ms	2000mb	\$2499	\$2599



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ClubMac 44mb Internal	\$345
ClubMac 44mb Dual	\$695

ClubMac 88MB REMOVABLES

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ClubMac 88mb Dual	\$875

SYQUEST CARTRIDGES

44mb Cartridge	\$63
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FEATURING



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**AS SEEN
IN MACS**

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
85mb	CP30080E	3.5" Low Profile	17ms	82mb	\$199	\$259
170mb	CP30170E	3.5" Low Profile	17ms	160mb	\$279	\$339
212mb	CP30200	3.5" Low Profile	12ms	206mb	\$369	\$429
540mb	CP30540	3.5" Half Height	10ms	515mb	\$897	\$957

Conner drives carry a ONE Year Warranty.

Seagate

FEATURING...THE ELITE DRIVES



Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" Disk Drives						
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1.2GIG	ST11200N	Half Height	10.5ms	1000mb	\$1369	\$1429
WREN AND ELITE SERIES (5.25" FULL HEIGHT)						
645mb	ST4767N	Wren Runner II	11.9ms	634mb	\$1519	\$1619
1.2GIG	ST41200N	Wren-7	15ms	989mb	\$1199	\$1299
1.6GIG	ST41651N	Wren-8	15ms	1350mb	\$1679	\$1779
2.1GIG	ST42100N	Wren-9	12.9ms	1900mb	\$1869	\$1969
1.6GIG	ST41600N	Elite-1	11.5ms	1307mb	\$1839	\$1939
2.4GIG	ST42400N	Elite-2	11ms	2050mb	\$2539	\$2639
3.4GIG	ST43400N	Elite-3	11ms	2750mb	\$3419	\$3519

Seagate drives carry a ONE Year Warranty.



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600mb	Teac MT2ST/F50	Analog	CT600F	\$629	\$649
2.0GIG	Archive Python	DAT, DDS	4mm	\$1129	\$1149
3-5GIG	Archive Turbo DAT	DAT, DDS-DC	4mm	\$1339	\$1359
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CMO-3100E	Ricoh	128mb	3.5" Half Height	45ms	\$1035	\$1075
CMO-JY750	Sharp	594/652mb	5.25" Half Height	40ms	\$2255	\$2295
CMO-5031E	Ricoh	594/652mb	5.25" Full Height	28ms		\$2345
CMO-Tahiti II	MaxOptix	650mb/1.0GiB	5.25" Full Height	35ms		\$3195
128mb Cartridge		3.5" Single Sided				\$39
594/652mb Cartridge		5.25"-512/1024 bytes/sec				\$99

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

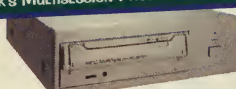
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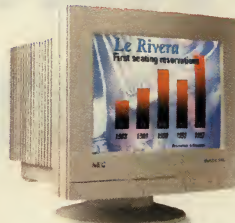
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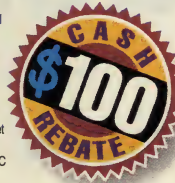
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FASTCACHE TURBO 33 \$335

CHARGER \$759

MEMORY...

Memory prices change frequently, call for current prices

STANDARD MAC

- 1mb X 8 SIMMS \$32
- 2mb X 8 SIMMS \$67
- 4mb X 8 SIMMS \$129
- 4mb with PAL SIMMS \$139
- 8mb SIMMS \$289
- 8mb SIMMS for Q700 \$299
- 16mb SIMMS \$585
- 16mb Low Profile SIMMS \$585

MAC IIFX

- 1mb X 8 SIMMS \$34
- 4mb X 8 SIMMS \$129
- 8mb SIMMS \$299
- 16mb SIMMS \$599
- CENTRIS 610/650/LCIII
- 4mb / 8mb / 16mb \$149 / 299 / 615
- 256K VRAM \$22
- QUADRA 800
- 4mb / 8mb / 16mb \$179 / 339 / 685
- VIDEO RAM
- 256K VRAM for Quadras \$22
- 512K VRAM for LC, LCIII, IIfx \$49

CACHE CARDS

- FastCache IIsi \$279
- FastCache IIsi with 68882 \$349
- FastCache IIsi \$199
- FastCache Quadra-Q700/900 \$249
- FastCache Quadra-Q700/900/950 \$375
- EXPANSION BOARDS
- DualPort IIsi \$165
- PowerMath LC \$115

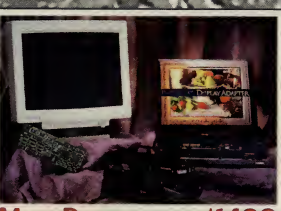
POWERBOOK 140/145/170

- 6mb Memory Module \$210
- POWERBOOK 160/180
- 4mb Memory Module \$169
- 6mb Memory Module \$245
- 8mb Memory Module \$325
- 10MB Memory Module \$419
- DUO 210/230
- 4mb Memory Module \$229
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- 20 Multimode Color (2085H) \$1299
- 20T MultiScan Trinitron (2075M) \$2139
- 21" Mono/Grayscale (2110) \$999
- 15" Mono/Grayscale Portrait (1510) \$499



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- PaintBoard 24 / Li \$1449 / 815
- RasterOps 24Sx \$619
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- RasterOps 24XLTV \$2639
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- RasterOps 24STV \$729
- PhotoPro NuBus \$589
- Video Expander NTSC \$529

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16 MB SIMM, 70ns	569
8 MB SIMM, 70ns (PB180&160)	369
Memory for new Macs	Call

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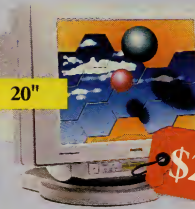
Newgen 400dpi/600dpi	1649/1895
Newgen 11x17" 600dpi	3795
Texas Instruments TURBO	Call
Texas Instruments microLaser PS17	1199
Apple LaserWriter IIF/IIG	2395/3195

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Philips 15" color display	599
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Philips 21" color display	2695
8-bit & 24-bit Accelerated Color Cards available for all displays. Call for prices.	

Apple 12"/14"	399/569
Sony 1304/1604	Call/1095
Seiko 1445 14" Trinitron	Call
Seiko 20" Trinitron	Call
RasterOps 20" Color Trinitron	Call
E-Machines T16 IIT/T19 II	1295/2395
E-Machines Color Cards	Call
E-Machines PowerLink Presenter	499

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Cards

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SE/30, LC, LC II, IIsi, II-
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Let us help you pick the right card!

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& Centris on-
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Radius MonoPivot	699
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VideoVision with Premier	1899
Radius Rockets/RocketShare	Call

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Trinitron
display

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2.0 NuBus Kit with Virex & Norton 149

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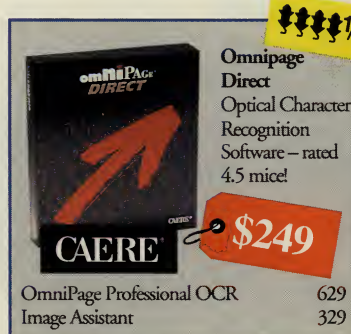
Umax UC630, 600dpi with Photoshop	1095
Tamarack Artiscan 600C w/ Photoshop	999
Tamarack Artiscan 800C w/ Photoshop	1295
Tamarack Artiscan 1200C	1995
24-bit True optical 1200 dpi, with Photoshop	

MICROTEK

NEW Microtek ScanMaker IIx	859
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Transparency Option for II & IIx	Call
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Quadra 950 8/0	4795
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for printers

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DaynaPort, Mac II family, IIsi	149
DaynaPort, Mac SE/30, LC, LC II	149
MiniHub/Hub12	239/679
PathFinder Router	629
SCSI Link	269
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Hayes Acura 144 fax modem	299

Supra Corporation®

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SupraFAX Modem V.32	299
SupraFAX Modem V.32 144	339

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CONNER

Unformatted Capacity	Access Time	Internal	External
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42 mb LPS	17 ms	\$178	\$228
85 mb LPS	17 ms	\$198	\$248
120 mb LPS	12 ms	\$258	\$308
170 mb LPS	12 ms	\$279	\$338
212 mb LPS	9 ms	\$358	\$419
540 mb	8.5 ms	\$868	\$928

QUANTUM

GO•Drive 2.5" Hard Drive (All Quantums - 2 year Warranty)			
80 mb	17 ms	\$319	\$419
120 mb	17 ms	\$449	\$549
160 mb	17 ms	\$499	\$599
ELS Series (3.5" Low Profile and Low Power Drives)			
42 mb	19 ms	\$175	\$229
85 mb	17 ms	\$214	\$268
127 mb	17 ms	\$289	\$339
170 mb	17 ms	\$309	\$369
LPS Series (3.5" Low Profile and Low Power Drives)			
240 mb	10 ms	\$439	\$479
525 mb	10 ms	\$919	\$979
Prodrive Series (3.5" Half Height Drives)			
700 mb	10 ms	\$1179	\$1239
1.0 Gig	10 ms	\$1339	\$1399
1.2 Gig	10 ms	\$1548	\$1579

TOSHIBA

3.5" & 2.5" Disk Drives (2 year Warranty)			
2.5" 213 mb	12 ms	\$648	\$748
3.5" 830 mb	12 ms	\$1029	\$1089
3.5" 1.2 Gig	12 ms	\$1368	\$1428

FUJITSU

3.5" & 5.25" Disk Drives (5 year Warranty)			
3.5" 330 mb	9 ms	\$838	\$888
3.5" 520 mb	9 ms	\$878	\$958
3.5" 1.1 Gig	8.5 ms	\$1589	\$1609
5.25" 1.2 Gig	11.5 ms	\$1289	\$1368
5.25" 2.06 Gig	11.5 ms	\$2119	\$2219
5.25" 2.4 Gig	11.5 ms	\$2348	\$2448

SEAGATE

3.5" Half Height Drives (1 and 5 year Warranties)			
1.2 Gig	10.5 ms	\$1358	\$1419
Wren and Elite Series (5.25" Full Height Drives)			
Wren 7 1.2 Gig	15 ms	\$1238	\$1339
Wren 8 1.6 Gig	15 ms	\$1668	\$1768
Wren 9 2.1 Gig	12.5 ms	\$1858	\$1959
Elite 1 1.6 Gig	11.5 ms	\$1828	\$1919
Elite 2 2.4 Gig	11 ms	\$2528	\$2628
Elite 3 3.4 Gig	11 ms	\$3419	\$3519

Modems

PROMETHEUS

	Price
Ultima Home Office ext 14.4/14.4SR Fax w/ V.42 bis & voice	\$398
Promodem 144i Internal for Powerbook 14.4/14.4SR Fax w/ V.42 & V.42 bis	\$278
Promodem 144e ext 14.4/96SR Fax w/ V.42 & V.42 bis	\$278
Promodem 24e ext 24/96SR Fax w/ V.42 & V.42 bis	\$128
Promodem Mini 2400 2400 BPS mini, data only	\$79

ZOOM TELEPHONICS

	Price
All units come with Microphone LT Software	
Faxmodem PBK for Internal Powerbook 96/48 SR Fax w/2400 BPS Modem	\$99
Faxmodem PKT Portable 96/48 SR Fax w/2400 BPS Modem	\$109
Faxmodem FXV V42 bis/MNP5/2400 BPS, 96/96 SR Fax	\$149
Faxmodem FXV.32 V.32 bis, 14.4 data & fax, V.42 bis/MNP5	\$279



Memory

Model	60 NS	70 NS	80 NS	Model	60 NS	70 NS	80 NS
1x8	Call	\$33	Call	2x8	Call	\$63	Call
4x8	Call	\$133	Call	8x8	Call	Call	\$279
16x8 FX	Call	Call	\$549	16x8 Q950	Call	Call	\$515

We carry most Mac Memory, Please Call for prices!

Memory for LCII, Centris 610, 615

4mb \$139	8mb \$279	16mb \$599
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Media

Model	QTY 1	5PK	10PK	Model	QTY 1	5PK	10PK
SyQ44 cart	\$69	\$67	\$65	SyQ 88 cart	\$109	\$104	\$99
128mb OPT	\$49	\$44	\$39	256mb OPT	\$88	\$84	\$79
60mm DAT	\$20	\$16	\$14	90mm DAT	\$25	\$19	\$17

Scanners

UMAX

Model	Price
Includes free software	
UC630 - Color w/free Photoshop	\$1078
UC1200s - Color w/free Photoshop	\$2948
UC840 - Color w/free Photoshop	\$1248
Transparency Unit	\$698
Auto Document feeder	\$398
UG600 - Greyscale w/free Typereader OCR, OFOTO & Publish It	\$848

MICROTEK

Includes free software	
Scanmaker II - Color w/free Photoshop LE	\$948
Scanmaker IIXE - Color w/free Photoshop	\$1248

Accelerators

DAYSTAR DIGITAL

Model	Without FPU	with FPU
33 MHZ Powercache	\$379	\$475
40 MHZ Powercache	\$549	\$645
50 MHZ Powercache	\$719	\$859
Powercache Adapter		\$40
Equalizer LC	\$169	\$239
Fast Cache IIsi	\$279	\$349
Fast Cache IICI		\$215
Fast Cache Quadra		\$259
Fast Cache Q 950		\$399
33 MHZ Turbo 040		\$1429
Fast Cache Turbo 33-12		\$339

Optical & DAT Drives

Includes one free disc (1 year Warranty)

128 mb Panasonic Optical	39 ms	\$998
128 mb Epson Optical	29 ms	\$1078
256 mb Most Optical	31 ms	\$1698

Unformatted Capacity	With DIO Backup	With Retrospect
Includes free 90m Tape & DIO Backup or Retrospect software		
WangTek 2.1 Gig DAT	\$998	\$1098
WangDat 5.0 Gig DAT	\$1398	\$1498

SyQuest

Unformatted Capacity	Access Time	Price
Includes one free cartridge (2 year Warranty)		
44 mb External	19 ms	\$378
88 mb External	19 ms	\$489
88C mb External	19 ms	\$589

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WE'VE PUT A ON THE OPTICAL TE



SPIN CYCLONE 3.5 OPTICAL DRIVE

We've accomplished two firsts. The first is that this is our first optical drive. The second first, even more exciting than the first first (maybe we should have put the second first first), is that this is the first second-generation optical drive for under a thousand bucks. It uses ISO standard 128 MB 3.5 cartridges, so you can use them with other drives. And it comes with our premium Cyclone small-footprint, "brick" enclosure. Plus a two year warranty. So, you ask, "Should I try it first?" In a second.

Cyclone 3.5 Optical Drive
Extra Cartridges: *35

\$999

SPIN DOUBLE SPEED CD ROM DRIVE

If you guessed that by spinning a CD at twice the speed, the Toshiba XM 3401 drive mechanism inside this Spin CD ROM drive can access data twice as fast, that expensive college education isn't going to waste. In fact, it breaks the 200 msec access time barrier. And offers sustained transfer rates of 330 KB/sec. Other CD ROM drives are left with their jaws hanging wide open. This drive is your best choice if you're running Quicktime® movies, photo CD, or multi-media apps. Pretty smart.

Spin Double Speed CD ROM Drive (External only) **\$499**

THE DEC DSP-3105 1-GIG DRIVE

Introducing the DEC DSP-3105 1-gigabyte drive. This Eddy award-winning monster moves like Ricochet Rabbit on double espresso. It's the world's fastest 3.5 inch drive. Thanks, in part, to a 5400 RPM spindle speed and a whopping 512K drive cache. With our minimum-footprint Cyclone™ enclosure, and a great price, and 5-year warranty, no one can touch it for value. Says MacUser: "It's a dream drive."

Cyclone enclosure	\$1799
Classic-style footprint enclosure	\$1749
Internal	\$1699



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If you're looking for DAT, you'll love dis. Cyclone DAT drives. They feature the zephyr-like Wang DAT drive mechanism – the industry standard for reliability. Our own Cyclone small-footprint chassis. And a price that won't dis you. Our standard Cyclone DAT drive has a 2.0 GB capacity. The compression model, up to 5 gigs. Both come with Dantz™ Retrospect back-up software, and a 90-meter DAT tape, free. Dat's all you need.

Cyclone Standard DAT **\$1199**

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SYQUEST 5110C 88/44 DRIVE

You want to upgrade your removable drive to 88 megs, but you've got a shelf full of old 44s staring you in the face. You have two options. One, use the old cartridges as coasters at geek cocktail parties. Or two, buy the new Spin Syquest 5110C drive that reads and writes both 44 and 88 meg cartridges. True, this drive does not format 44 MB cartridges, but we have a way around that – pre-formatted 44s.

Syquest 5110C 44/88 Drive	\$589
Syquest 88 MB Removable	\$489
Syquest 44 MB Removable	\$389
Syquest Media	
Unformatted 44 MB	\$61
Unformatted 88 MB	\$99
Formatted 44 MB	\$85
Formatted 88 MB	\$139



ZERO FOOTPRINT DRIVES

We've gotten letters lately – mostly in crayon – from a few folks asking why we call these drives "zero footprint" when they obviously exist in three dimensions and take up space. We'd like to point out that when placed under your Plus or Classic or SE it takes up no more space than the computer already does. Zero. Neat trick, huh? Our sturdy zero-footprint drives feature a number of different mechanisms from makers like Conner, Quantum, Toshiba. Check the matrix below for the capacity you need. And please, put down that crayon.

Capacity (MB)	Model Number	Average Access Time (msec)	Transfer rate (K/sec)	MTBF (Hours)	MFG warranty (months)	Internal Drive Price	External Drive Price	Cyclone Drive Price
Conner								
85	CP-30080E	16	1300	150000	24	\$199	\$269	
120	CP-30100	16	1300	150000	24	\$269	\$339	
170	CP-30170E	16	1400	150000	24	\$279	\$359	
213	CP-30200	15	2000	150000	24	\$349	\$419	
Quantum								
85	ELS 85S	17	1800	250000	24	\$199	\$269	
127	ELS 127S	17	1800	250000	24	\$269	\$339	
170	ELS 170S	17	2000	250000	24	\$299	\$369	
240	LPS 240S	16	2300	250000	24	\$399	\$469	
80 (Pwrbk)	GRS-80	17	1900	150000	12	\$349		
Toshiba								
210 MB (Pwrbk)	MK-2224	12	1800	150000	12	\$549		
1.2 GB	MK-538	12	2800	250000	36	\$1149	\$1199	\$1249
DEC								
1.05GB	DSP-3105	9.5	2600	250000	60	\$1699	\$1749	\$1799
Seagate								
456MB	ST-3550N	12	3500	250000	36	\$849	\$899	\$949
1.05GB	ST-11200N	10.5	3200	200000	60	\$1199	\$1249	\$1299
Fujitsu								
520MB	M2624FA	9	2700	200000	60	\$899	\$949	\$999
1.06 GB	M2694FA	9	2800	200000	60	\$1549	\$1599	\$1649

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— Stephen E. Snider



* E-Machines 16" Color (ColorPage T16)

E-MACHINES



* SuperMac 20" (SuperMatch Dual-Mode)

SUPERMAC



* RealTech 20" Trinitron Multi-Mode



Monitors: all sizes, brands & prices

Need help choosing a monitor? Not sure if you need one that auto-syncs? Call our friendly sales team. They're happy to answer your questions.

	Price	Tube type	640 x 480	640 x 870	832 x 624	1024 x 768	1152 x 870	Auto-syncing	Anti-glare
A. Radius 21" Color	\$3,069	Hitachi							
NEC 21" 6FG Color	2,429	NEC							
SuperMac 21" Mono/Grayscale	989	—							
B. SuperMac 20" (SuperMatch)	\$1,499	Hitachi							
C. RasterOps 20" Trinitron Multi-Mode	2,329	Trinitron							
* RealTech 20" Trinitron Multi-Mode	1,895	Trinitron							
Radius Precision Color 20"	2,389	Trinitron							
RasterOps 20" Hitachi Color	1,469	Hitachi							
* SuperMac 20" (SuperMatch Dual-Mode)	2,499	Trinitron							
E-Machines 19" Color (T19 II)	2,399	Trinitron							
D. Mitsubishi 17" Diamond Pro	\$1,199	Trinitron							
E. NEC 17" 5FG Color	1,329	NEC							
F. Seiko Instruments 17" CM1760LR	1,249	Trinitron							
G. Sony 17"	1,149	Trinitron							
H. RealTech 17" Multi-Mode	995	Hitachi							
I. RasterOps 16" (RasterOps Sweet 16)	\$1,249	Panasonic							
* E-Machines 16" Color (ColorPage T16)	1,299	Trinitron							
J. NEC 15" 4FG Color	789	NEC							
K. Radius 15" Precision Color Pivot	\$959	Non-Trinitron							
L. Sigma 15" Grayscale (PageView GS)	579	Phillips							
M. RealTech 15" Grayscale	449	—							
Sigma 15" Grayscale (Power Portrait)	659	Phillips							
NEC 15" 3FGX Color	669	NEC							
N. Seiko Instruments 14" Color (CM1445)	\$499	Trinitron							
O. Sony 13" Color	689	Trinitron							

* shown above

Don't know which card is compatible with your CPU & monitor? Call us toll-free.

	Price	Maximum resolution	Accelerated
RASTEROPS			
ProColor 32	\$3,219	1152 x 870	
PaintBoard 24	1,599	1152 x 870	
8XL	479	1152 x 870	
PaintBoard Li (24)	829	1024 x 768	
24STV*	799	640 x 480	
MediaTime*	1,599	640 x 480	
SUPERMAC			
Spectrum/24 PDQ Plus	\$1,549	1152 x 870	
Spectrum/8 LCII, IIsi	499	1152 x 870	
Spectrum/8 NuBus	419	1024 x 768	
Spectrum/24 Series IV	829	1024 x 768	
Spectrum/8•24 PDQ	829	640 x 480	
Spectrum/8•24	579	640 x 480	
Video Spigot*	369	160 x 120	
Video Spigot & Sound*	479	160 x 120	
RADIUS			
Precision Color 24X	\$1,649	1152 x 882	
Precision Color 8XJ	499	1152 x 882	
Precision Color 24XK	829	1024 x 768	
Precision Color 24XP	499	832 x 624	
Video Vision*	1,979	640 x 480	
E-MACHINES			
ColorLink DC/T (8-bit with Ethernet)	\$519	1024 x 768	
ColorLink SX/2 (24-bit with Ethernet)	649	1024 x 768	
Futura SX24	499	1024 x 768	
DoubleColor LX (8)	699	1152 x 870	

*24-bit; captures up to 30 frames per second

Wacom Cordless Digitizing Tablets

\$489

Lease: \$60/mo.

Cordless, pressure sensitive stylus translates your pen-strokes into line width, spray density, color changes, and other programmable effects. Paint, draw, trace, and point as naturally as if you were writing. The standard tablet has a plain surface. The electrostatic tablet is ideal for video graphics, photo retouching, and print pre-press work.

Wacom ArtZ Graphics Tablet

6" x 8" High Speed ADB **\$319**

Wacom (SD Series)

6" x 9" Standard **\$489**
 12" x 12" Standard **689**
 12" x 12" Electrostatic **759**
 12" x 18" Standard **1029**
 12" x 18" Electrostatic **1099**

Your one-stop source for Mac solutions.

Scanners

Toll-free phone ordering
(or fax 24 hours a day)
FAX: 1-409-539-4141

Flatbed desktop scanners for 24-bit color, 8-bit grayscale, and black/white images. Ideal for mid-range output or position prints for mockups/presentations.

	Price	DPI	Brightness & contrast levels	Scanning area	Flat art	Transparencies	Slides	Software
MICROTEK								
Scanmaker II	\$909	600	14	8.5 x 13.5	■			Includes limited version of Adobe Photoshop
Scanmaker IIXE	1,179	600	14	8.5 x 13.5	■			Includes full version of Adobe Photoshop
Scanmaker 1850 Slide Scanner Transparency Option	1,569	1850 (1850)	14 (14)	2.5 square inches			■	Includes full version of Adobe Photoshop
REALTECH								
Scan 800 Optional Adobe Photoshop	\$1,099 200	800	200	8.5 x 11.75	■			Includes Scan-Match color calibration software
Scan 800 with Transparency Option	1,595	800	200	8.5 x 11.75	■	■	■	
UMAX								
UC 630	\$1,179	600	51	8.5 x 14	■			Includes full version of Adobe Photoshop
Transparency Option	729	(600)	(51)	6 x 9	■	■	■	
UC 840	1,329	800	51	8.5 x 14	■			Includes full version of Adobe Photoshop
Transparency Option	729	(800)	(51)	6 x 9	■	■	■	

SII Seiko Instruments Personal ColorPoint PSE

Prints full-bleed comps on plain laser paper or transparency film. 300 dpi color thermal printer uses 16 MHz RISC processor. 5 Mb RAM standard, upgradable to 9 or 21 Mb.

Adobe PostScript® compatible. Includes AppleTalk, parallel, and RS-232 interfaces, plus an optional SCSI port. Continuously polls all interfaces;

\$2,699

Lease: \$73/mo.



reconfigures automatically. 17 resident fonts.

RASTEROPS
THE ART & SCIENCE OF COLOR®
\$8,099 Lease: \$222/mo.

RasterOps CorrectPrint 300i Dye Sublimation Printer with 36 Mb

Uses a 4-color (CMYK) dye sublimation thermal process at 300 dpi for photographic-quality output. Prints on special sheeted paper or transparencies, not on rolls. 8.1" x 11" image size on legal paper. Uses a RISC controller, 35 resident fonts, three interfaces, including TCP/IP.

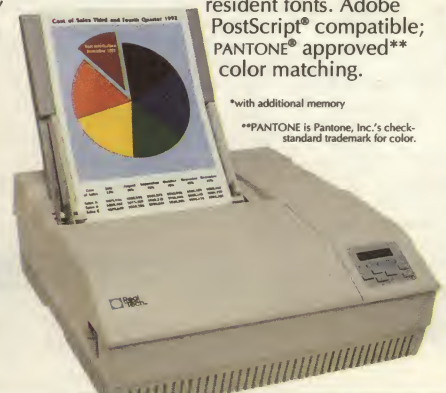
RealTech

\$5,995 Lease: \$164/mo.

RealTech Color 350

Prints 11x17 (OB size)* 300 dpi edge-to-edge comps for about \$1.13 per page. (Letter-size output, approx. 69¢ each.) Creates true black text—uses 4 colored ink sheets (CMYK). RISC processor. 10 Mb of RAM, upgradable to 18 or 34 Mb. 3 standard interfaces. 39 resident fonts. Adobe PostScript® compatible; PANTONE® approved** color matching.

*with additional memory
**PANTONE is Pantone, Inc.'s check-standard trademark for color.



POWERBOOK PORTABLE DOCKS

PowerLink Presentor (8-bit)\$469
Designed for presentations. Connects the PB Duo to almost any type of video screen. The ideal travel dock.

PowerLink DeskNet (8-bit)659
Connects to Ethernet networks, color displays, external SCSI devices, etc.

POWERBOOK SYSTEMS

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PowerBook Duo 230 8/802859
PowerBook 160 8/402679
PowerBook 165c 4/803399
PowerBook 180 8/804359



E-MACHINES

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Call 1-800-364-MACS.



The photo above is a 300 dpi image of an 8 x 10 transparency. It was scanned on the RealTech Scan 800 with the Transparency Option (shown below), then adjusted with ScanMatch and color-corrected with Adobe Photoshop.

MICROTEK



RealTech

MICROTEK

Custom systems



\$6,399
Lease: \$175/month

Quadra 700/Trinitron Intermediate Graphics Solution Quadra 700, 8 Mb of RAM, 520 Mb hard drive, RealTech 20" Trinitron monitor w/PaintBoard Li and KeyTronic MacPro Plus extended keyboard.

IlvX SYSTEM

IlvX, 5 Mb of RAM, 230 Mb hard drive, SuperMac 21" Platinum monitor with video card, cache card, and KeyTronic MacPro Plus extended keyboard.....\$4639

CENTRIS 610 SYSTEM

Centris 610, 4 Mb of RAM, 80 Mb hard drive, Seiko Instruments 14" Color CM1445 monitor, and KeyTronic MacPro Plus extended keyboard.....\$2415

CENTRIS 650 SYSTEMS

Centris 650, 8 Mb of RAM, 80 Mb hard drive, Sony 17" Color monitor, and KeyTronic MacPro Plus extended keyboard.....\$4075

Centris 650, 8 Mb of RAM, 230 Mb hard drive, 20" RealTech Trinitron Monitor, RasterOps Paintboard Li and KeyTronic MacPro Plus extended keyboard..\$5695

QUADRA 800 SYSTEM

Quadra 800, 8 Mb of RAM, 230 Mb hard drive, 20" RealTech Trinitron Monitor, RasterOps Paintboard Li and KeyTronic MacPro Plus extended keyboard..\$6979

QUADRA 950 SYSTEM

Quadra 950, 8 Mb of RAM, 520 Mb hard drive, 20" RealTech Trinitron monitor, RasterOps Paintboard Li, and KeyTronic MacPro Plus extended keyboard..\$8819

WE WANT TO BE YOUR MACINTOSH SOLUTIONS PARTNER (...WE'RE REALLY NOT INTERESTED IN A ONE-SHOT SALE)



In these difficult economic times, value is the most important criteria for making a purchasing decision. We're in our eighth year of providing the best value in the Mac market. Sure, there are some companies that can give you a better price on a particular product...but will they stand behind it (and by you...and will they even still be in business)? We will. We're a subsidiary of a financially-sound public company, and have been members of the Better Business Bureau since 1987.

We offer you the best overall value, customer service, technical support, and financing options...because we're interested in being your total solutions partner...and because we'll be around to help you.

We've become known as America's one-stop source for Macintosh solutions. Why? Because our friendly sales and customer service teams have always been more interested in solving your computing challenges than in making a quick buck. From time to time, they have to talk a customer out of buying more equipment than they really need. That's because we believe in building relationships and providing total solutions...and that's why we're America's largest mail order seller of Mac hardware.

Real Provencher
President

CUSTOMER SERVICE

When you order from us, you get computer experts, not clerks! All of our salespeople are trained in Apple's intensive program, as well as our own. On average, they have at least three years of Mac experience. They're ready to help you (with a smile!) both before and after the sale.

TECH SUPPORT

Our tech team is well trained, well informed, and well known for their ability to solve customers' problems with a minimum of inconvenience to the customer.

We have the best tech support team in the business. Call them toll-free at:

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We've made it easier than ever to own our productivity-enhancing products.

- VISA and MasterCard
- corporate P.O. accounts (call for information)
- business leasing available (more information below)

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OUR FAMOUS GUARANTEE: If you don't like it, we'll buy it back. If you're not 100% satisfied, call for your RMA number and return the product within 30 days of the ship date. We'll cheerfully refund your purchase price (minus consumables for printers).

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- 3 **Speed Lease**...90- or 180-day terms, with buy-out or conversion to other leases
- 4 **20/20 Lease**...10% security deposit, 20 equal payments, 10% buy-out
- 5 **90-day Deferred Lease**...no payment for 90 days; first and last payment in advance

*All leases are subject to credit approval. All lease payments in our ads are based on the "True Lease" program at 48 months. Prices, lease prices, and rates are subject to change without notice. **NOTE: Minimum lease payment is \$50 per month.**

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**Asanté
10T Hub/8
(Ethernet
concentrator)**

Lets you use inexpensive unshielded twisted-pair (UTP) telephone wire instead of expensive coaxial cable for local area networks.

10Base-T Hub/8.....\$265

Asanté EN/SC (SCSI-to-Ethernet adapter). For Macs without available slots.

EN/SC.....\$339

Asanté MacCon 3 Ethernet card. Automatically configures to media used.

MacCon 3 Card.....\$216

DaynaPORT E/II-T NuBus Card

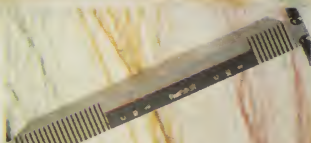
Connects Mac II computers to thick, thin, fiber optic or 10Base-T Ethernet cable systems.

Includes an RJ-45 jack for 10Base-T wiring.

DaynaPORT E/II-T NuBus Card.....\$149

DaynaPort E/Z. Ideal for Macs that don't have a slot for a network interface card.

DaynaPORT E/Z.....\$269



**Farallon
Shiva**

FastPath SR Router/Gateway.....\$1669

NetBridge.....\$589

EtherGate Router.....\$1239

NetSerial.....\$269

NetModem/E.....\$1409

NetModem v.32 (for LocalTalk).....\$989

Hublet.....\$199

LanRover/L.....\$579

LanRover/E (4-port).....\$1659

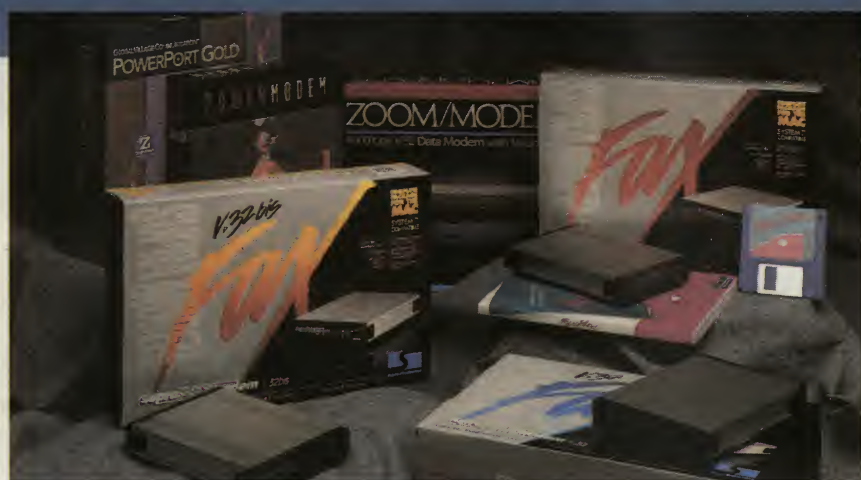
TeleBridge.....\$589

Dayna EtherPrint

Supports AppleTalk Phase 1 and Phase 2 protocols; divide your network into multiple zones.

Dayna EtherPrint.....\$335

Dayna EtherPrint Plus.....\$439



MODEMS

Zoom 9600 v.32/42 bis.....\$259

MassMicro FM 24/96 Network.....\$359

MassMicro FM 24/96 Personal.....\$165

Global Village TelePort-Gold.....\$459

Global Village TelePort-Silver.....\$399

Global Village TelePort-Bronze.....\$209

Supra v.32.....\$289

Supra v.32 bis (14,400).....\$359

SupraFax Modems include STF and Microphone software, and are backed by a 5-year warranty.

SupraFax Modem Plus.....\$179

SupraFax 144 PB.....\$299

Laser printers.

The right printer can do wonders for your productivity. Do you need speed? Adobe PostScript Level 2? Do you need to print a lot of pages each month?

Dpi	Engine speed RAM	Interpreter Microprocessor	Duty cycle Paper trays	SCSI port Interfaces	Resident fonts Misc.
-----	---------------------	-------------------------------	---------------------------	-------------------------	-------------------------

NEC Silentwriter Model 95

Lease: \$38/month

■ 300 dpi
■ 6 pages/min.
■ 2 Mb RAM (expandable to 5 Mb)

■ Adobe PostScript Level 2
■ Motorola 68000 processor

■ 6,000 pages per month
■ Built-in envelope feeder & 250-sheet tray; optional 2nd tray available in letter or legal sizes

■ No SCSI port
■ Appletalk RS-422, parallel, and RS-232C

■ 35 Micro-fine toner and NEC's patented "Sharp Edge" technology create sharp black print quality

NEC



RealTech Laser

Lease: \$44/month

■ 300 dpi
■ 9 pages/min.
■ 2 Mb RAM (expandable to 10 Mb)

■ Adobe PostScript Level 2
■ Weitek RISC processor

■ 5,000 pages per month
■ Optional 2nd paper tray & cassette feeder are available for \$250 (for both).

■ SCSI port
■ Appletalk RS-422, parallel, and RS-232C.

■ 35 ATM font rendering technology builds raw type characters 4 to 5 times faster, enabling the RealTech Laser to print complex documents faster than other printers in its price range.

RealTech Laser

Lease: \$44/month

★★★★1/2

"The RealTech features not just a genuine Adobe interpreter, but also a PostScript Level 2 raster image processor (RIP), which earns it more than a few points for forward compatibility."

— PUBLISH MAGAZINE, Feb. 1992

Texas Instruments MicroLaser XL Turbo

Lease: \$77/month

■ 300 dpi
■ 16 pages/min.
■ 2.5 Mb RAM (expandable to 10.5 Mb)

■ Adobe PostScript Level 2
■ Weitek RISC processor

■ 25,000 pages per month
■ Optional 2nd paper drawer

■ Optional SCSI port
■ Appletalk RS-422, parallel, and RS-232C

■ 35

TEXAS INSTRUMENTS



Texas Instruments MicroLaser Plus

Lease: \$34/month

■ 300 dpi
■ 9 pages/min.
■ 1.5 Mb RAM (expandable to 4.5 Mb)

■ Adobe PostScript Level 1
■ Motorola 68000 processor

■ 10,000 pages per month
■ Optional 2nd paper drawer and envelope feeder

■ Optional SCSI port
■ Appletalk RS-422, parallel, and RS-232C

■ 17 Available with 35 resident fonts (\$1349)

NewGen 660B

Lease: \$111/month

■ 600 dpi
■ 8 ppm (letter size); 4.6 ppm (tabloid size)
■ 12 Mb RAM (expandable to 96 Mb)

■ PostScript compatible
■ Weitek XL-8220 RISC processor

■ 10,000 pages per month
■ Optional 2nd paper drawer

■ SCSI port
■ Appletalk RS-422, parallel, and RS-232C

■ 35

NewGen 660B

Lease: \$111/month

The only 11x17 printer with Adobe PostScript Level 2 for less than \$3500.



■ Choice of 300 or 400 dpi
■ 15 ppm (letter size); 8 ppm (tabloid size)
■ 4 Mb RAM (expandable to 16 Mb)

■ Adobe PostScript Level 2
■ Weitek RISC processor (and ATM font rendering technology)

■ 30,000 pages per month
■ Two paper trays included (one tray for letter size; one tray for tabloid size.)

■ SCSI port
■ Appletalk RS-422, IBM PC parallel, and RS-232C.

■ 35

Jeanne is thrilled that she can print proofs of her company newsletter on tabloid-size paper. No more tiling!

"...be forewarned: PostScript-clone printers still have a long way to go before they can rival true Adobe PostScript printers."

Quote from MacUser September 1992 issue, "Personal PostScript Printers" by Bruce Fraser.

★★★★ MACWORLD MAGAZINE September 1992

Lease: \$88/mo.

QMS 860 Hammerhead

Lease: \$117/mo.

■ 600 dpi
■ 8 ppm (letter size); 4.6 ppm (tabloid size)
■ 12 Mb RAM (expandable to 32)

■ Adobe PostScript compatible
■ Intel 80960CA RISC processor

■ 10,000 pages per month
■ Optional 2nd paper cassette

■ SCSI port
■ Optional Ethernet
■ 39 fonts

Three interface ports: Appletalk RS-422, IBM PC parallel, and RS-232C.

Hours: 8 am-7 pm Central Standard Time

30-DAY MONEY-BACK GUARANTEE on all hardware (except leases, printer consumables and special-order items). Before returning merchandise, call our Customer Service Dept. toll-free to receive a returned merchandise authorization number (RMA), which must be included with any products you return. No C.O.D. returns, please. Thank you for your cooperation. ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Accelerators

DAYSTAR DIGITAL

DAYSTAR DIGITAL

NEW! Turbo 040 Accelerators

Get the maximum in 68040 acceleration and 100% compatibility. For Mac IIci and IIxi; includes math chip.

25 MHz Turbo 040.....\$1099

33 MHz Turbo 040.....\$1349

25 MHz FastCache Turbo 040.....\$259

33 MHz FastCache Turbo 040.....\$339

Universal PowerCache Accelerators

Math chip available.

33 MHz Accelerator.....\$379

40 MHz Accelerator.....\$499

50 MHz Accelerator.....\$719

PowerCache Adapter.....\$40

Charger (Photoshop Accelerator)

Includes PicturePress 2.5, Charger Plug-ins, and Kodak Photo CD access with clip art images.

Charger.....\$799

RADIUS

radius ROCKET™

For the Mac II family. Includes QuickDraw and display-list acceleration software.

Radius Rocket 25i.....\$1239

Radius Rocket 33.....\$2069

SCSI II Booster.....\$249

Rocket Share.....\$419

DO YOU FEEL THE NEED

FOR SPEED? CALL, AND

WE'LL MATCH YOU WITH

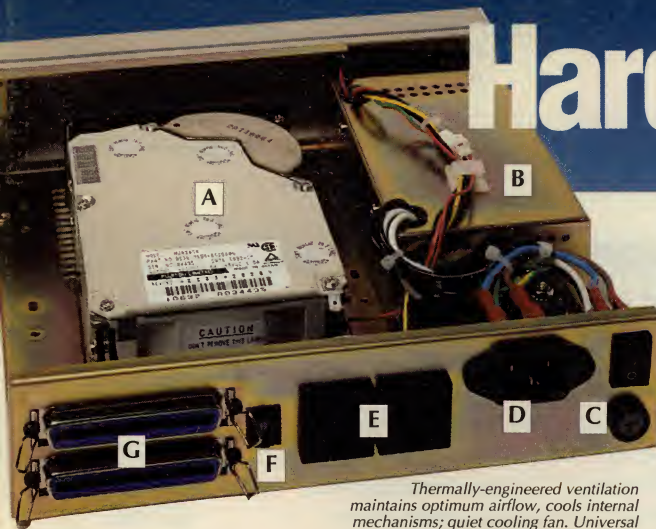
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Applied Engineering®

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Hard drives.



Thermally-engineered ventilation maintains optimum airflow, cools internal mechanisms; quiet cooling fan. Universal power supply (90-260 volts).

Why our drives are superior

- Fast access times
 - optimum MTBF
 - top-level warranties
 - and...
- A. We use the highest quality name-brand mechanisms available; fully tested and burned in
- B. Shielded 40 watt power supply (65 watt for FH drives) keeps the drive free of interference, your data free of corruption
- C. External fuse keeps fuse replacement simple
- D. Power cable plug-in
- E. Two switched outlets provide power to additional peripherals, allowing 1-step system power-up
- F. Easy-to-use pushbutton SCSI I.D. selector switch
- G. Two 50-pin SCSI connectors for simple configuration
- (Not shown) Premium double-shielded 26-inch Mac-to-SCSI cable prevents electronic interference

Do you need a fixed hard drive, or the flexibility of a floptical? Call us; we can explain your options.

	Model number	Price (Internal)	Price (External)	Formatted Mac capacity	Avg. access time	Transfer rate*	MTBF** (hours)	Form factor	Warranty (years)
40 - 120 Mb									
Quantum 42 ELS	ELS42	\$189	\$259	40 Mb	19 ms	1.4	250,000	3.5 LP	2
Conner 85	CP-30080E	225	295	82 Mb	17 ms	1.5	150,000	3.5 LP	1
Quantum 85 ELS	ELS85	219	289	82 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 120	CP-30100	279	349	116 Mb	17 ms	1.5	150,000	3.5 LP	1
Maxtor 120	7120XT	269	339	121 Mb	15 ms	1.5	150,000	3.5 LP	2
120 - 250 Mb									
Quantum 127	ELS127	\$289	\$359	124 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 170	CP-30170E	299	369	160 Mb	9 ms	1.5	150,000	3.5 LP	1
Quantum 170 ELS	ELS170	319	389	160 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 212	CP-30200	379	449	206 Mb	12 ms	2.5 ¹	150,000	3.5 LP	1
Maxtor 213	7213	379	449	207 Mb	15 ms	2.8	150,000	3.5 LP	2
Quantum 240	LPS240	419	489	234 Mb	10 ms	1.4	250,000	3.5 LP	2
Maxtor 245	7245	429	499	246 Mb	15 ms	3.0	150,000	3.5 LP	2
Seagate 248	ST3283N	519	589	235 Mb	12 ms	3.0 ²	250,000	3.5 LP	1
320 - 570 Mb									
Maxtor 340	LXT-340	\$649	\$719	324 Mb	15 ms	2.1 ¹	150,000	3.5 HH	2
Fujitsu 425	M2623FA	899	969	405 Mb	9 ms	2.7 ¹	200,000	3.5 HH	5
Seagate 426	ST1480N	919	989	426 Mb	14 ms	2.6 ¹	150,000	3.5 HH	1
Fujitsu 520	M2624FA	939	1009	496 Mb	9 ms	2.7 ¹	200,000	3.5 HH	5
Quantum 525 LPS	LPS525	989	1059	500 Mb	10 ms	3.2 ¹	250,000	3.5 LP	2
Seagate 525	ST1581N	1029	1099	525 Mb	14 ms	4.0 ²	150,000	3.5 HH	1
Maxtor 540	MXT-540	999	1069	546 Mb	9 ms	5.5 ¹	300,000	3.5 HH	2
Conner 540	CP-3540	979	1049	515 Mb	12 ms	5.5 ²	150,000	3.5 HH	1
Micropolis 560	M2105	1129	1199	560 Mb	10 ms	5.0 ¹	300,000	3.5 HH	5
660 Mb - 1.05 Gb									
Seagate 663	ST4766N	\$1119	\$1219	645 Mb	15.5 ms	1.8	150,000	5.25 FH	1
Seagate 676	ST4767N	1519	1619	645 Mb	11.9 ms	3.0 ¹	150,000	5.25 FH	1
HP 677	97556	1469	1569	620 Mb	13.5 ms	2.8 ¹	150,000	5.25 FH	5
Quantum 700	PRO700	1249	1319	700 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
Toshiba 877	MK-438FB	1099	1169	830 Mb	12.5 ms	3.0 ¹	200,000	3.5 HH	2
Quantum 1050	PRO1050	1419	1489	1000 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
HP 1050	97558	2099	2199	987 Mb	13.5 ms	2.8 ¹	150,000	5.25 FH	5
Seagate 1050	ST11200N	1649	1719	1000 Mb	10.5 ms	5.1 ²	200,000	3.5 HH	1
1.1 - 3.6 Gb									
Fujitsu 1.2	M2266	\$1395	\$1495	1079 Mb	14.5 ms	3.0 ¹	200,000	5.25 FH	5
HP 1.2	C2247	1589	1659	1000 Mb	10.5 ms	5.3 ¹	300,000	3.5 HH	5
Micropolis 1.2	M2112	1729	1799	1005 Mb	10 ms	5.0 ¹	300,000	3.5 HH	5
Quantum 1.2	PRO1225	1599	1669	1200 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
Seagate 1.2	ST41200N	1369	1469	999 Mb	15 ms	3.0 ¹	150,000	5.25 FH	1
Toshiba 1.2	MK-538FB	1399	1469	1200 Mb	12.5 ms	4.0 ¹	200,000	3.5 HH	3
Maxtor 1.24	MXT-1240	1999	2069	1240 Mb	9 ms	4.5 ¹	300,000	3.5 HH	3
Conner 1.3	CP-31370	2099	2169	1030 Mb	10.5 ms	6.0 ¹	250,000	3.5 HH	1
Micropolis 1.5	M1528	2299	2399	1341 Mb	14.5 ms	2.9 ¹	150,000	5.25 FH	5
Micropolis 1.6	M1548	2379	2479	1748 Mb	14 ms	4.8 ¹	150,000	5.25 FH	5
Seagate 1.6	ST41651N	1899	1999	1352 Mb	15 ms	4.0 ²	150,000	5.25 FH	1
Fujitsu 2.0	M2652	2449	2549	1752 Mb	11 ms	4.8 ²	200,000	5.25 FH	5
Micropolis 2.0	M1924	2649	2749	2100 Mb	11.5 ms	4.8 ²	250,000	5.25 FH	5
Seagate 2.1	ST42100N	1999	2099	1900 Mb	12.9 ms	3.9 ²	150,000	5.25 FH	5
Seagate 2.4	ST42400N	2879	2979	2050 Mb	11 ms	4.5 ²	150,000	5.25 FH	5
HP 2.4	C3010	2899	2999	2000 Mb	11.5 ms	5.3 ²	300,000	5.25 FH	5
Seagate 3.4	ST43400N	3999	4099	2750 Mb	11 ms	6.0 ²	200,000	5.25 FH	5
Micropolis 3.6	M1936	4299	4399	3022 Mb	12 ms	6.0 ²	250,000	5.25 FH	5

* Transfer rate (or throughput) depends on your Mac CPU and system configuration. For more information, ask your Hardware That Fits sales partner. **MTBF=Mean Time Between Failure LP=Low Profile HH=Half Height FH=Full Height

¹ SCSI-2 ² SCSI-2 Fast These drives are most efficient when used with a Macintosh Quadra 800, 950 or a RealTech SCSI-2 card.



CONNER

FUJITSU

hp HEWLETT
PACKARD

MAXOPTIX

Maxtor®

MICROPOLIS

Quantum

Seagate

TOSHIBA

REMOVABLES*

REALTECH® FLOPTICAL®
21 Mb Drive (w/1 disk)\$339
Drive w/Diskette 5-pack399

REALTECH MAGNETO-OPTICAL
128 Mb Drive (w/1 disk)\$1069
Drive w/Diskette 5-pack1229

Maxoptix Tahiti II Drive
(652/1.0 Gb capacity;
35 ms access time;
1 yr. warranty)\$3269

REALTECH TAPE BACKUP
Includes Retrospect 2.0
backup software.
TEAC 155 Mb Drive \$499
TEAC 600 Mb Drive .749

REALTECH DAT
DDS-DC Drive (2-5 Gb
capacity; 1 yr. warranty;
includes Retrospect 2.0
backup software)...\$1399

The RealTech DAT Drive uses
industry-standard DDS-DC
compression on a 90-meter tape.
Depending on your data, storage
capacities may vary from 4 to 8 Gb.



SYQUEST®

44 Mb Drive\$389
88c Mb Drive599

*Includes one disk or tape

REMOVABLE MEDIA

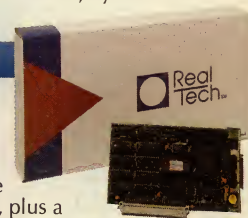
21 Mb Floptical Diskette\$21
5-pack of Floptical Diskettes105
128 Mb Optical Diskette\$49
5-pack of Optical Diskettes209
652 Mb M-O Cartridge.....99
1.0 Gb ZCAV M-O Cartridge.....239
155 Mb TEAC Tape\$19
600 Mb TEAC Tape28
60-meter DAT Tape.....\$13
90-meter DAT Tape.....16
44 Mb SyQuest Cartridge\$63
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ELS 127mb	17ms	3.5"TH	\$259	\$319
ELS 170mb	17ms	3.5"TH	\$299	\$359
LPS 105mb	10ms	3.5"TH	\$239	\$299
LPS 120mb	10ms	3.5"TH	\$279	\$339
LPS 240mb	10ms	3.5"TH	\$399	\$459
LPS 525mb	10ms	3.5"TH	\$899	\$959
Pro 700mb	10ms	3.5"TH	\$1179	\$1239
Pro 1.05gb	10ms	3.5"HH	\$1339	\$1399
Pro 1.22gb	10ms	3.5"HH	\$1499	\$1559
*GO-80mb	16ms	2.5"PB	\$299	\$399
*GO-120mb	16ms	2.5"PB	\$379	\$479

TWO year Warranty. *ONE year Warranty on GO drives.
FWB™ HDT Formatting Software Included.



All Syquest cartridges are
bundled with DIVA VideoShop
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FREE!
until 4/30/93

Model	
External SyQuest 44mb (*One Cartridge Inc.)	\$385
External SyQuest 88mb (*One Cartridge Inc.)	\$485
External SyQuest 88mb C** (*One Cartridge Inc.)	\$585
Internal 44mb SyQuest (for Quadra 900&950)	\$345
Internal 88mb SyQuest (for Quadra 900&950)	\$465
Internal 88mb C SyQuest (for Quadra 900&950)	\$555
External SyQuest Dual 44mb (*One Cartridge Inc.)	\$725
External SyQuest Dual 88mb (*One Cartridge Inc.)	\$895
External SyQuest Dual 44/88mb (*One 44 & One 88 Cartridge)	\$895
External SyQuest Dual 88C mb (*One Cartridge Inc.)	\$1075
External SyQuest Dual 44/88C mb (*One 44 & One 88 Cartridge)	\$995
SyQuest 44mb Cartridge/10 Pack	\$63/\$620
SyQuest 88mb Cartridge/5 Pack	\$97/\$480

All SyQuest Drives come with FWB™ HDT Formatting Software. SyQuest carries a TWO year Warranty on Drives and ONE year on Cartridges.
* READS AND WRITES 44 AND 88 CARTRIDGES. Does not format 44 cartridges.

TOSHIBA

Formatted Capacity	Speed	Size	Internal	External
877mb	12.5ms	3.5"HH	\$1039	\$1099
1.23gb	12.5ms	3.5"HH	\$1339	\$1399
213mb NEW!	12ms	2.5"PB	\$649	\$749

CD-ROM

600mb NEW! 200ms	3.5"HH	\$639	\$699
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Toshiba carries a THREE year Warranty on drives. ONE year Warranty on CD Rom. FWB HDT Formatting Software Included.

MAGNETO OPTICAL DRIVES

TEAC

Model	Speed	Size	External
128mb	45ms	3.5"HH	\$979
128mb cartridges (Tosoh)			\$39

RICOH

Model	Speed	Size	External
128mb	45ms	3.5"HH	\$1075
650mb	28ms	5.25"FH	\$2375
128mb/650mb Cartridge			\$39/95

Maxtor®

Model	Speed	Size	External
Tahiti II	35ms	1.0gb	\$3175
1.0gb Optical Glass Cartridge			\$225

All MO drives come with FWB HDT software.
ONE MO cartridge and have a ONE year Warranty.

TAPE BACK-UP DRIVES

ARDAT

Model	External
Viper 250	\$499
Viper 500	\$699
2.0gb	\$1149
4.0gb - 8.0gb HC Turbo	\$1349
90m / 60m Tape	\$19/\$16

TEAC

Model	External
150mb Tape Backup Drive	\$449
600mb Tape Backup Drive	\$649
600mb / 150mb Tape Cassette	\$25/\$20

All tape backup drives come bundled with FREE
Retrospect V.2.0, one tape and have a ONE year Warranty.



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Maxtor	120mb 3.5"HH	\$239
Conner	170mb 3.5"HH	\$279
Fujitsu	520mb 3.5"HH	\$899
Quantum	525mb 3.5"HH	\$899
Fujitsu	778mb 5.25"FH	\$999
Micropolis	1.05gb 3.5"HH	\$1339

MICROPOLIS

Formatted Capacity	Speed	Size	Internal	External
698mb	10ms	3.5"HH	\$1239	\$1299
1.05gb	10ms	3.5"HH	\$1339	\$1399
2.1gb	12ms	5.25"FH	\$2695	\$2795

Fast SCSI-2 Drives. FIVE year Warranty.
FWB™ HDT Formatting Software Included.

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Formatted Capacity	Speed	Size	Internal	External
85mb	17ms	3.5"TH	\$195	\$255
170mb	13ms	3.5"TH	\$279	\$339
212mb	12ms	3.5"TH	\$359	\$419
540mb	12ms	3.5"HH	\$869	\$929
545mb NEW!	10ms	3.5"TH	\$899	\$959

TWO year Warranty.
FWB™ HDT Formatting Software Included.

FUJITSU

Formatted Capacity	Speed	Size	Internal	External
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672mb SPECIAL!	16ms	5.25"FH	\$999	\$1099
1.07gb NEW!	9ms	3.5"HH	\$1639	\$1699
1.07gb	15ms	5.25"FH	\$1369	\$1469
1.75gb	15ms	5.25"FH	\$2279	\$2379
2.05gb	12ms	5.25"FH	\$2489	\$2589

FIVE year Warranty.
FWB™ HDT Formatting Software Included.

Maxtor®

Formatted Capacity	Speed	Size	Internal	External
120mb	15ms	3.5"TH	\$239	\$299
213mb	15ms	3.5"TH	\$349	\$409
340mb	15ms	3.5"HH	\$589	\$649
535mb	12ms	3.5"HH	\$955	\$1015
540mb NEW!	9ms	3.5"HH	\$999	\$1059
1.02gb NEW!	9ms	3.5"HH	\$1655	\$1715
1.24gb	13ms	5.25"FH	\$1295	\$1395
1.47gb	13ms	5.25"FH	\$1595	\$1695

TWO year Warranty on 3.5" Drives and FIVE Years on 5.25" Drives. FWB™ HDT Formatting Software Included.

Seagate

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1.2gb	15ms	5.25"FH	\$1249	\$1349
1.6gb	15ms	5.25"FH	\$1679	\$1779
2.1gb	13ms	5.25"FH	\$1869	\$1969
1.6gb	11ms	5.25"FH	\$1839	\$1939
2.4gb	11ms	5.25"FH	\$2539	\$2639
3.4gb	11ms	5.25"FH	\$3429	\$3529

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MultiSync 6FG - 21" Monitor	\$2355
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SilentWriter 97FX Printer	\$2199
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- 17" Multi-Frequency Color Monitor
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radius™

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Spectrum 24 PDQ Plus	\$1519
Thunder/8	\$1169
Spectrum/8 • 24 PDQ	\$839
Spectrum 24/Series IV NEW!	\$819
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Digital Film w/Adobe Premiere v2.0	\$4949

SONY

1302 - 14" Color Multiscan	\$599
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*Includes MAC Adaptor. Quadra compatible.

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FastCache Turbo 33-128k cache	\$345
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PowerCache 33MHz OR w/ FPU	\$385/\$475
PowerCache 40MHz OR w/ FPU	\$555/\$645
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PowerCache Adapters*	\$42

* Additional on all PowerCache cards except for IICI

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All the extras for upgrading your PowerBook or Duo...

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Apple Mouse	\$79

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Check out our GO Drives in the Quantum Section!

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4mb/6mb/8mb \$179/\$255/\$355

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NEW MACINTOSH SIMMS **\$CALL**

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Two year warranty.

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120MB (3 1/2")	\$349	\$409	\$459	\$509
127MB (3 1/2")	\$279	\$339	\$389	\$439
170MB (3 1/2")	\$309	\$369	\$419	\$469
240MB (3 1/2")	\$389	\$449	\$499	\$549
525MB (3 1/2")	\$909	\$969	\$1019	\$1069
700MB (3 1/2")	\$1199	\$1259	\$1309	\$1359
1.05GB (3 1/2")	\$1339	\$1399	\$1449	\$1499
1.2GB (3 1/2")	\$1539	\$1599	\$1649	\$1699

80MB (2 1/2") for Powerbook	\$299	See PocketDrive
120MB (2 1/2") for Powerbook	\$399	See PocketDrive
160MB (2 1/2") for Powerbook	\$549	See PocketDrive

Seagate	Internal	ZFP+	HP	Internal	ZFP+
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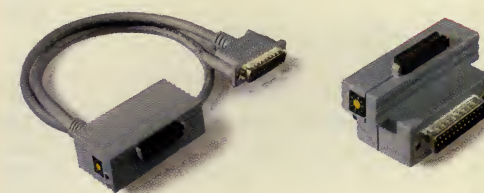
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		\$79

*While supplies last

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Includes Retrospect™ and 1 free tape.

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1.3-2.0GB DAT	\$1439	\$1559
4-8GB Comp. DAT	\$1549	\$1649

88C
Now Available!



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Our 44-88MB removable media drives deliver Syquest technology in a zero footprint case. Includes 1 free cartridge.

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44MB Cartridge	\$79
88MB Cartridge	\$119

ExpressDrive™

Here's tight security and portability. La Cie Express Drives offer removable drive convenience and Quantum quality.

ExpressDrive Chassis	\$399
50MB Quantum LPS Drive	\$349
100MB Quantum LPS Drive	\$419
120MB Quantum LPS Drive	\$469
240MB Quantum LPS Drive	\$819



Actual Silverscanner II Image

Silverscanner II™

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La Cie Silverscanner II

with Color It!
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ToolKit Software
425 MB
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10411...170 MB ELS Drive.....	349
10142...105 MB Pro Drive.....	299
10137...120 MB Pro Drive.....	335
10131...240 MB Pro Drive.....	479
10150...425 MB Pro Drive.....	899
10130...525 MB Pro Drive.....	1039
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10147...1050 MB Pro Drive.....	1499
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9139...80 MB LPS Drive.....	229

All drives come with FWB Hard Disk ToolKit software.
Bracket w/cable (specify computer).....10
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- 2 switchable power outlets
- Universal 40 watt power supply
- FWB's Hard Disk ToolKit Personal
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Toner Cartridge**Printer**
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1115...LaserWriter II Toner.....	89
7748...Personal LaserWriter Toner.....	72
7970...LaserWriter Pro Toner.....	109
1113...Apple ImageWriter Ribbon Black.....	10
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10925...PLI Optical Drive 128 Internal.....	1379
4645...PLI Infinity MO Optical 128 MB.....	1449
5585...Mass Micro DataPak MO 128.....	1545

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2864...PLI 21 MB Floptical Drive.....	399
10500...Iomega Mac Floptical 21 MB.....	459
7018...Mass Micro FloptiPak - 21 MB.....	429

Mass Storage Optical

2325...PLI Infinity Optical Drive 558 MB.....	2599
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Floppy Drives

9864...Apple 800K External used.....	150
10817...Apple 800K Internal used.....	135
8334...PLI SuperFloppy - 3.5".....	329
8335...PLI TurboFloppy - 3.5".....	289
8361...AE - 3.5", FDHD External Floppy.....	229
5290...AE - Plus Drive FDHD.....	297

DAT Drives

2327...PLI 4 GB DAT Drive.....	1499
9528...FWB HammerDAT2000 2GB.....	1749
9525...FWB HammerDAT5000 5GB.....	1989

MDS Removable Drives

5533...44 MB w/AutoDoubler.....	439
5532...44 MB w/Norton Utilities.....	439
5534...88 MB w/AutoDoubler.....	539
5535...88 MB w/Norton Utilities.....	539
10589...88 MB 5110c w/Norton Utilities.....	649
10591...88 MB 5110c w/ AutoDoubler.....	649

Bernoulli Drives

8234...Iomega Insider 90 Pro Internal.....	649
10499...Iomega Mac Transportable 150.....	799
8781...Iomega Mac Transportable 90 Pro.....	499
6501...Iomega Bernoulli Dual 90 Pro.....	1479

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11012...Dayna EtherPrint-3.....	379
8719...EtherPrint.....	339
9888...EtherPrint 10Base-T.....	339
9889...EtherPrint Plus 10Base-T.....	449
9887...EtherPrint Plus.....	449
11011...EtherPrint-3 Plus.....	479
5414...DaynaPort SCSI Link-3 - 3 port.....	325
3667...DaynaPort SCSI/Link 10Base-T.....	269
3666...DaynaPort SCSI/Link - Thin.....	269

MEDIA**Removable Media**

5118...Iomega - Bernoulli 2 Cart 44 MB.....	99
5113...Iomega - Bernoulli 2 Tripak 44 MB.....	279
2530...Iomega - Gold Std 90m Cartridge.....	149
2467...Iomega - Gold Std 90m Tripak.....	439
10604...MultiDisk Cartridge 35 MB.....	49
10606...MultiDisk Cartridge 65 MB.....	79
10599...MultiDisk Cartridge 105 MB.....	105
10602...MultiDisk Cartridge 150 MB.....	149

Floppy Disks

3297...Sony 3.5" 800k Disks.....(10).....	9
6148...Sony 3.5" 800k Disks.....(30).....	25
3298...Sony 3.5" FDHD Disks.....(10).....	14
6375...Sony 3.5" FDHD Disks.....(30).....	39
2214...Fuji 800k Disks.....(10).....	9
2242...Fuji 800k Disks.....(50).....	32
7758...Fuji 3.5" HD Disks formatted (11).....	14
2241...Fuji FDHD Disks.....(50).....	59
2243...Fuji 800k Color Disks.....(10).....	10
2239...Fuji FDHD Color Disks.....(10).....	14

High Density Disks**Fuji 11 Pack #7379** **\$13****Optical Media**

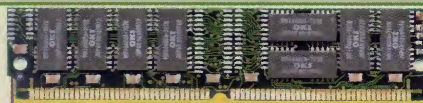
2865...PLI - 21 MB Floptical Cart.....(1).....	27
6767...PLI - 21 MB Floptical Cart.....(5).....	125
2899...PLI - 21 MB Floptical Cart.....(10).....	245
3016...PLI - 512 MB -5.25" Media.....(1).....	129

Komag Optical**128 MB**
\$39 #10439

10439...Komag - 128, 3.5" Optical.....(1).....	39
10440...Komag - 128, 3.5" Optical.....(3).....	109
10442...Komag - 128, 3.5" Optical.....(5).....	175
10441...Komag - 128, 3.5" Optical.....(10).....	339

Tape Media

3943...3M - 40 MB Tape Cartridge.....	17
1603...Sony - DG60m DAT Tape Cartridge.....	16
2520...Sony - DG90m DAT Tape Cartridge.....	16
7671...TEAC - CT600H 60 MB Cartridge.....	16
11262...TEAC - CT600H 60 MB 3 Pack.....	44
10834...TEAC - CT600H 60 MB 10 pack.....	139
7672...TEAC - CT600N 150 MB Cartridge.....	24
11261...TEAC - CT600N 150 MB 3 Pack.....	66
7673...TEAC - CT600F 600 MB Cartridge.....	36

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2199.....(4) 1 MB SIMM - 80ns/30-pin.....	156
4201.....(2) 1 MB SIMM for Mac IIfx.....	78
7497.....(4) 1 MB SIMM for Mac IIfx.....	156
9437.....(1) 2 MB SIMM IIsi, LC, LC II, IIfx.....	74
7437.....(1) 4 MB SIMM - 80ns/30-pin.....	169
7600.....(4) 4 MB SIMM - 80ns/30-pin.....	579
7599.....(4) 4 MB SIMM for Mac IIfx.....	579
9536.....(4) 4 MB SIMM for Mac II, IIfx.....	649
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5478.....(4) 16 MB SIMM Quadra 700.....	2199

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11152.....(1) 8 MB SIMM - 72-pin/70ns.....	299
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10341...4 MB RAM Duo 210/230.....	229
10340...8 MB RAM Duo 210/230.....	447
9424...4 MB RAM PB 160/180.....	209
9426...6 MB RAM PB 160/180.....	289
9427...8 MB RAM PB 160/180.....	405
9446...10 MB RAM PB 160/180.....	499
3742...2 MB RAM PB 100/140/145/170.....	99
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10390...PowerBook Starter Kit.....	122
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10392...Charger 140/145/160/170/180.....	94

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8187.....Optima 24 + 96 S/R fax - V.32.....	119
8168.....Optima 96 + 96 S/R fax - V.32.....	359
7395.....Optima 144 + 144 S/R fax - V.32	389
7440.....Ultra 24 - V.42, V.42bis	399
7391.....Ultra 9600 - V.32	599
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3655.....24/96 Fax Modem	144
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11351 ..50 MHz PowerCard for IIfx	525
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*Mean Time Between Failure is the average life expectancy of a drive.

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2.1 Gig Wren 5.25" 12.5ms, 5 Yr warranty	\$1948	\$2048
1.6 Gig Elite 5.25" 11.5ms, 1 Yr warranty	\$1998	\$2098
2.4 Gig Elite 5.25" 11ms, 5 Yr warranty	\$2898	\$2998
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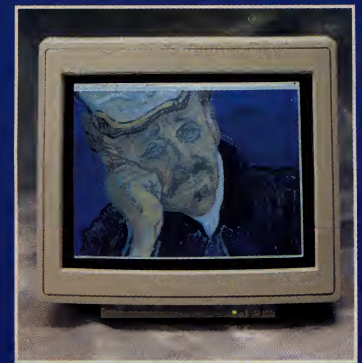
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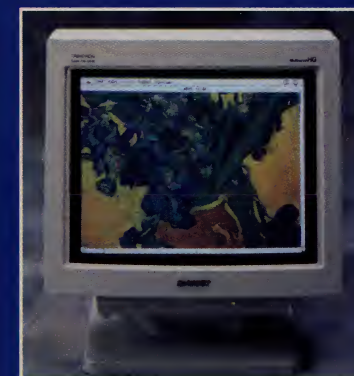


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Kensington Turbo Mouse 106
LC 16mhz Math Co-Processor 59
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MODEMS

DOVE COMPUTER CORP



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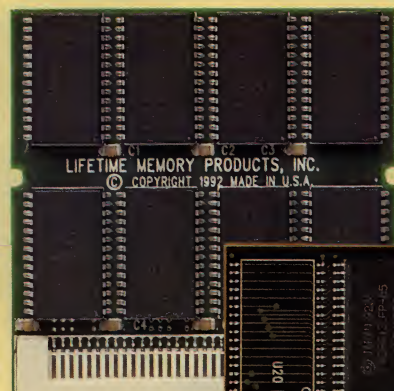
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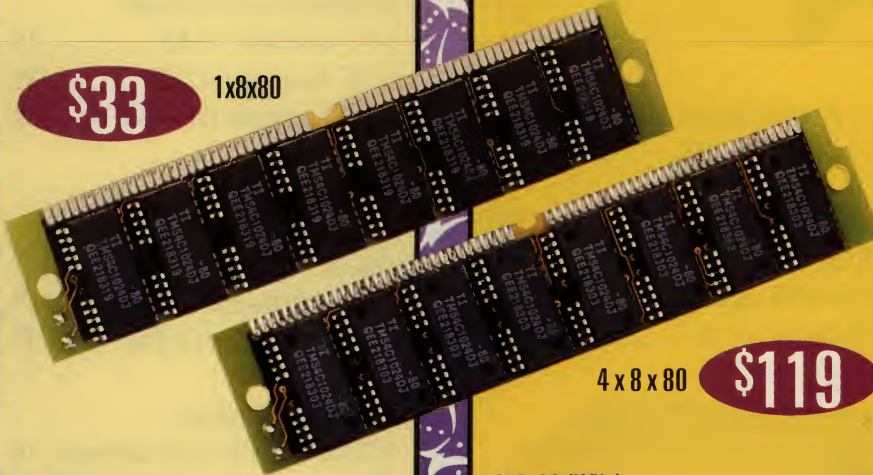
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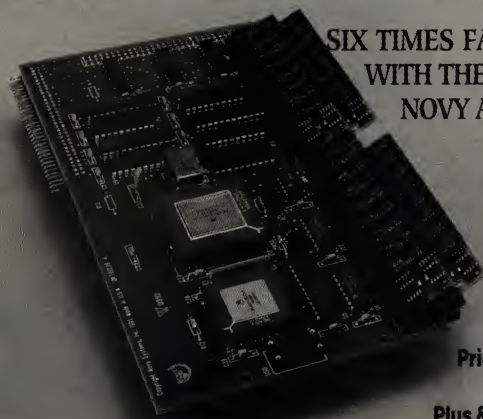
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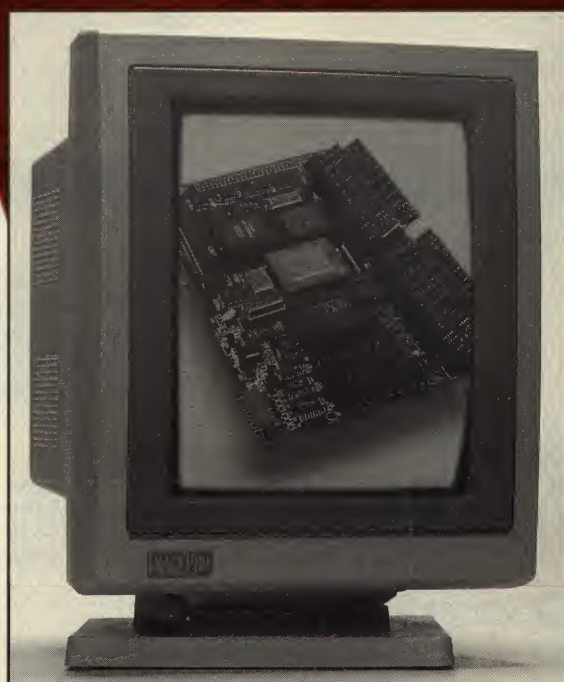
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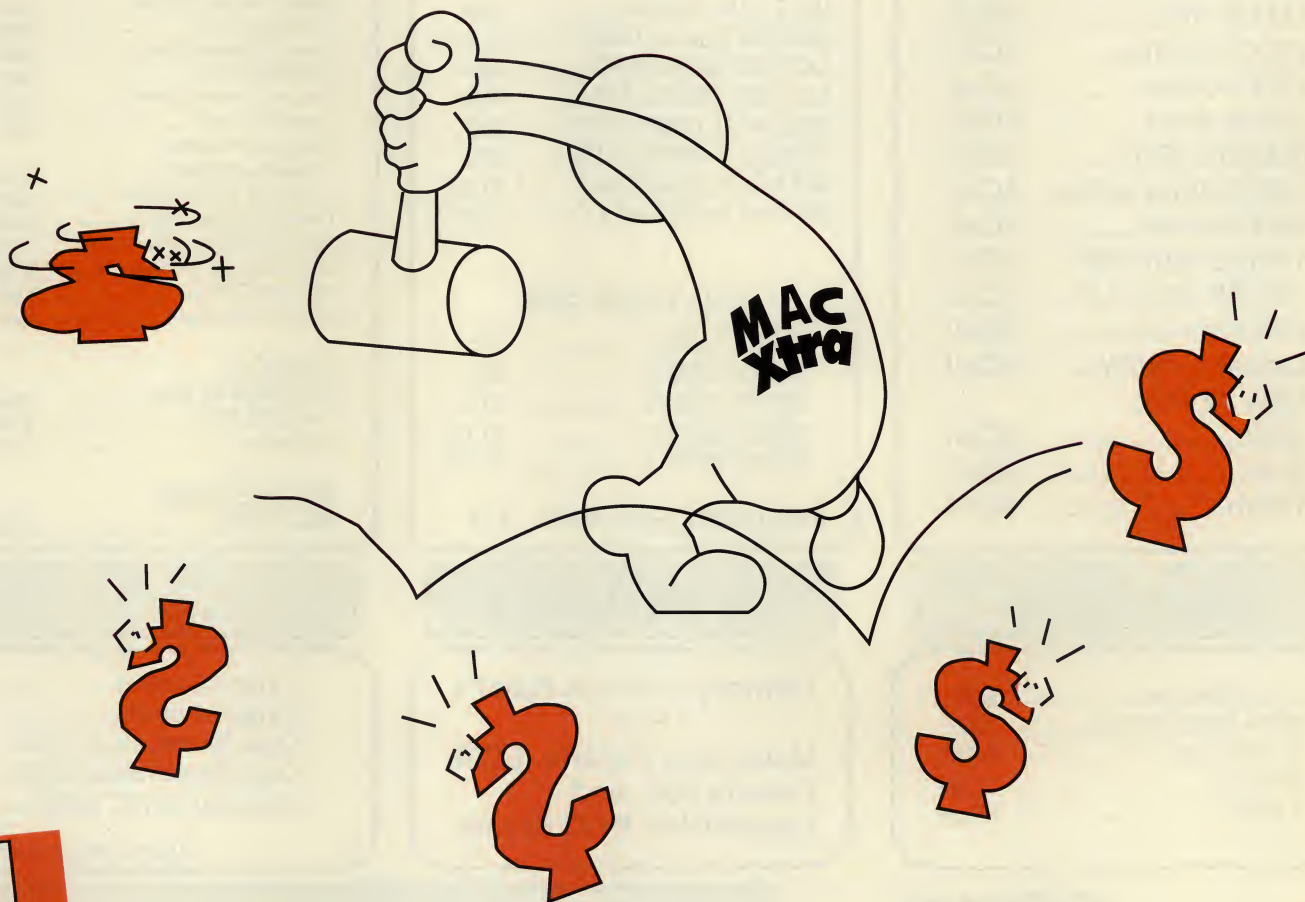


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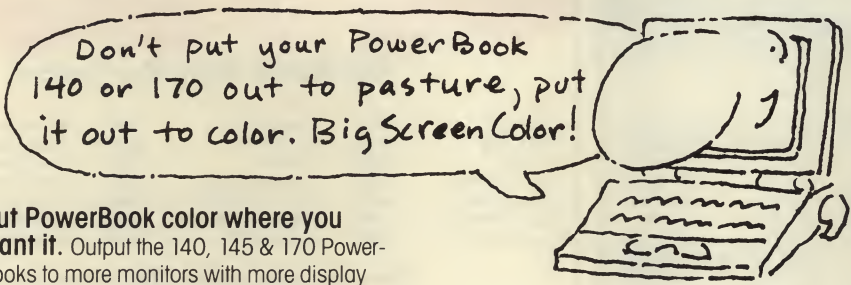
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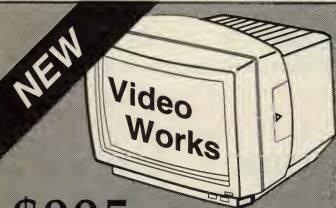
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1624	660	HH	14	\$1080	\$1170
2112	1035	3.5	10	\$1230	\$1292
1598	1049	FH	14	\$1434	\$1515
1528	1345	FH	14	\$1710	\$1784
1908	1405	FH	10	\$1890	\$1959
1548	1748	FH	14	\$1914	\$1983
1924	2070	FH	11.5	\$2514	\$2568
1936	3022	3.5	12	\$3534	\$3562

FUJITSU 5 YEAR WARRANTY

TYPE	MB	SIZE	SEEK	INT.	EXT.
M2623FA	425	3.5	12	\$797	\$891
M2624FA	520	3.5	12	\$770	\$862
M2266S	1079	FH	14	\$1195	\$1312
M2694	1080	3.5	10	\$1489	\$1581
M2652S	1750	FH	11	\$2083	\$2200
M2654S	2061	FH	11	\$2277	\$2395

DEC 5 YEAR WARRANTY

TYPE	MB	SIZE	SEEK	INT.	EXT.
DSP3085S	850	3.5	12	\$1249	\$1344
DSP3105S	1050	3.5	12	\$1306	\$1401
DSP3160S	1660	3.5	12	\$1926	\$2021
DSP5200S	2000	FH	10	\$2005	\$2100
DSP5350S	3500	FH	10	\$ CALL	\$ CALL

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ST1581N	525	3.5	14	\$886	\$980
ST3600N	540	1"	10.5	\$859	\$953
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ST1980N	860	3.5	9.9	\$1082	\$1175
ST41200N	1037	FH	16	\$1082	\$1199
ST11200N	1037	3.5	10.5	\$1199	\$1259*
ST41600N	1420	FH	15	\$1755	\$1872
ST41650N	1420	FH	11.5	\$1491	\$1608
ST42100N	1900	FH	12.9	\$1807	\$1924*
ST42400N	2100	FH	10	\$2451	\$2568*
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LPS525S	525	1"	10	\$915	\$1007
PD700S	700	1"	10	\$1155	\$1247
PD1050S	1050	3.5	10	\$1324	\$1416
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127MB	ELS/17MS	\$265	\$325
170MB	ELS/17MS	\$295	\$355
240MB	LPS/10MS	\$366	\$426
425MB	PRO/10MS	\$877	\$937
525MB	LPS/10MS	\$905	\$965
700MB	PRO/10MS	\$1150	\$1210
1.0GIG	PRO/10MS	\$1320	\$1380
1.2GIG	PRO/10MS	\$1489	\$1549

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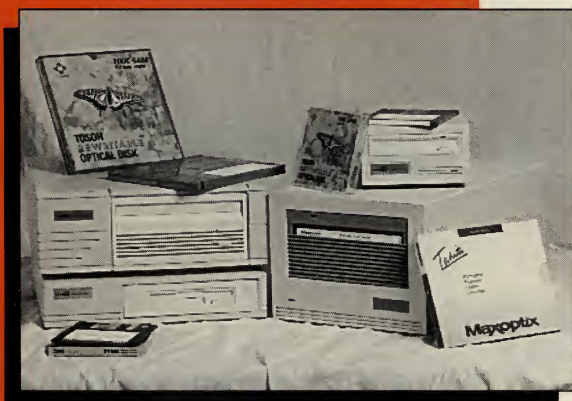
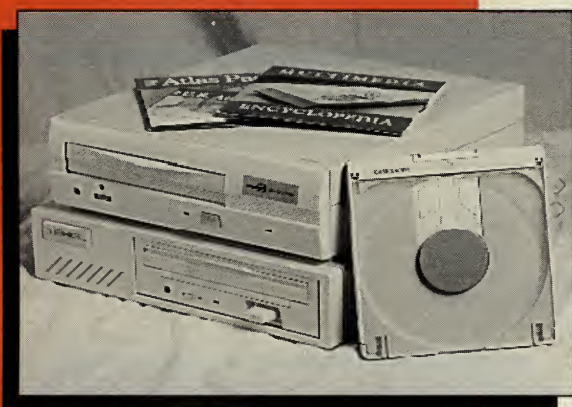
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130Meg	17ms	3600	Maxtor	2 Years	\$239	\$319
170Meg	17ms	3600	Conner	2 Years	\$269	\$349
213Meg	15ms	3600	Maxtor	2 Years	\$329	\$409
213Meg	12ms	4500	Conner	2 Years	\$339	\$419
240Meg	16ms	4300	Quantum	2 Years	\$359	\$439
340Meg	13ms	3600	Maxtor	1 Year	\$589	\$669
520Meg	12ms	4400	Fujitsu	5 Years	\$829	\$909
540Meg	8.5ms	6300	Maxtor	2 Years	\$999	\$1079
560Meg	10ms	5400	Micropolis	5 Years	\$1059	\$1139
877Meg	12ms	3600	Toshiba	5 Years	\$1059	\$1139
1050Meg	10ms	5400	Micropolis	5 Years	\$1399	\$1479
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1100Meg	10.5ms	5400	HPackard	5 Years	\$1529	\$1599
1230Meg	12ms	3600	Toshiba	5 Years	\$1329	\$1399
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Toshiba	200ms	330KB/sec	Battery Powered	N/A	\$729
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650Meg	27ms	Hewlett Packard	MultiFunction	\$2559	\$2599
1Gig	35ms	Maxoptix Tahiti IIM	MultiFunction	\$2959	\$2999
Media	20Meg	20Meg 5 pack	128Meg	128Meg 5 pack	650Meg
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1.2GB PRO1225	3.5 HH	10	\$1549 \$1609
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• Drives have one year warranty

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PowerModem III	\$319
PowerModem IV	\$379

APPLIED ENGINEERING

Accelerators	
for Mac LC, LCII, Performa 400, & Color Classic	
TransWarp 4300 40MHz	\$379 w/FPU \$529
for Mac SE & SE/30	
TransWarp 1300 25MHz	\$189
TransWarp 1300 40MHz	\$259 w/FPU \$469
for Mac Classic	
TransWarp 2300 25MHz	\$189
TransWarp 2300 40MHz	\$259 w/FPU \$409

MAGNETO OPTICAL MEDIA

MO Cartridge	600MB	5.25"	\$99
MO Cartridge	128MB	3.5"	\$40

POWERBOOK ACCESSORIES

PowerBook Cable HDI-30 ~ 50 Centronics	\$39
PowerBook Battery for 140/145/160/170/180	\$65
Battery Charger	\$99
Power Pad (keypad)	\$89
PowerBook Memory	(Call)
NEW! Toshiba 205MB Internal 2.5"	
Hard Disk for PowerBook Computers. MK224FB-S	\$599

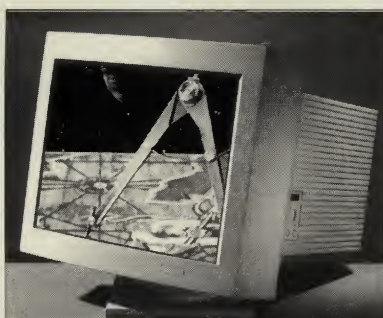
Since 1978 510-471-6112 Relax...you're in good company.

From the beginning, Relax's relationship with corporate customers has been strong.

As a matter-of-fact, over 50% of our sales are from repeat customers.

Our customers must be satisfied since the majority of our new customers are from referrals.

We must be doing something right.



20 Inch Color Trinitron!

\$1,599

Monitor Only

Trinitron Monitor Only 1,599
Business Package* - 256 Color 1,799
Artist Package* - 16 Million Color .. 2,449

* Package includes a new 20" Captronics CDS-8920 Mac compatible Trinitron color monitor, video board, and cable. 72 dpi for WYSIWYG. 1024 x 768.

radius



Monochrome Pivot Monitor ... 745
PrecisionColor Pivot 15" 949
Multifrequency. Mac on-board compatible.
19" Monochrome Monitor 899
PrecisionColor Display/19 ... 1,999
Hitachi tube - multifrequency.
PrecisionColor Display/20 ... 2,299
Sony Trinitron tube - multifrequency.
Color Display/21 2,999
Two-page display. Hitachi tube - 1,152 x 870.
Mono Pivot Video Board 249
Color Pivot Video Board 499
PrecisionColor 8XJ 489
256 colors (8-bits) at maximum resolution (1,152 x 882), 4 display resolutions, accelerated.
PrecisionColor 8X 739
256 colors (8-bits) at maximum resolution (1,152 x 882), 4 display resolutions, accelerated.

PrecisionColor 24XP 489
16 million colors (24-bits) at maximum resolution (832 x 624), 2 display resolutions, accelerated.
PrecisionColor 24XK 819
16 million colors (24-bits) at maximum resolution (1,024 x 768), 3 display resolutions, accelerated.
PrecisionColor 24X 1,629
16 million colors (24-bits) at maximum resolution (1,152 x 882), 4 resolutions, non-accelerated.
PowerView (PowerBook) 489
VideoVision 1,949
16 million colors (24-bits) at maximum resolution (640 x 480), 4 display resolutions, non-accelerated, video capture up to 30 frames/sec.
PrecisionColor Software 249
Radius Rocket 33 1,949
Radius RocketShare 399
Radius SCSI-2 Booster 249

Video Monitors & Packages

RASTEROPS®

Custom Color 20" System
24-Bit Color - 20" Trinitron Monitor

\$4,199*

ProColor 32 3,149
24XLI 1,859
PaintBoard 24 1,459
PaintBoard Li 849
8XL 479
24STV - Multi Media 799
MoviePak 1,549
24XLTV Multi Media .. 2,749
24MxTV Multi Media . 1,649
MediaTime Multi M. ... 1,599
ClearVue/Classic 299
ClearVue/LC 299

* Include \$200 back direct from RasterOps. Offer expires 3/31/93.

14 Inch
256 Color
Monitor!

\$359

Complete 8-Bit Package - \$499

Compatible with Macintosh On-Board Video:
LC, LCII, si, ci and Quadra 900/950



MoviePak

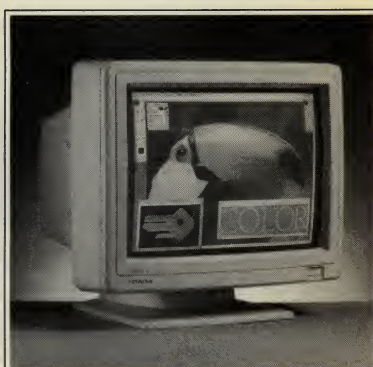
Adobe Premiere Special!

MoviePak works with all RasterOps multi-media display adapters to give you full-motion digital video recording, and full-screen playback and print-to-tape capabilities, all in a single-slot solution for any size Macintosh.

\$1,549

RASTEROPS®

For a limited time, MoviePak includes Adobe Premiere free - a \$695 value!



20 Inch Hitachi
256 Color
Monitor!

\$799

Monitor Only

20" Hitachi Monitor Only 799
Business Package* - 256 Color 999
Artist Package* - 16 Million Color .. 1,649

* Package includes a new 20" Hitachi Mac compatible color monitor, video board, and cable. 72 dpi for WYSIWYG. 1024 x 768.
Your satisfaction is guaranteed or your money back!

20 Inch Sampo OfficePro Ila
256 Grayscale!

Monitor Only

Monitor Only 599
Mac II, x, fx, cx, ci Package* 799
Mac LC, LCII, SE/30 Package* 999

* Package includes a new 20" Sampo OfficePro Ila Mac compatible grayscale monitor, video board, and cable. 72 dpi for WYSIWYG. 1024 x 768.

Your satisfaction is guaranteed or your money back!



SIMMs & Accel.

Mac II, IIfx, IICx, IICi & Quadra:

Classic 3 Meg. Card w/1 Meg. 49
1 Meg. - 1M x 8 - 120 26
1 Meg. - 1M x 8 - 100 29
1 Meg. - 1M x 8 - 70 32
2 Meg. - 2M x 8 - 80 59
4 Meg. - 4M x 8 - 80 119
4 Meg. - 4M x 8 - 70 129
8 Meg. - 8M x 8 - 80 279
16 Meg. - 16M x 8 - 80 499
16 Meg. - 16M x 8 - 80 (Low) ... 529
16 Meg. - 16M x 8 - 70 (Q-950) 499

Mac IIfx:

4 Meg. - 4M x 8 - 70 (IIfx) 149
8 Meg. - 8M x 8 - 80 (IIfx) 299
16 Meg. - 16M x 8 - 80 (IIfx) 599

Video Memory:

Mac LC - 512K Video SIMM 49
Quadra 700 - 256K Video SIMM . 29
Quadra 900 - 256K Video SIMM . 29
Quadra 950 - 256K Video SIMM . 29

All SIMMs have a limited lifetime warranty! Call for latest prices!

Mac Powerbook:

Powerbook 100 - 4 Meg. Card .. 179
Powerbook 100 - 6 Meg. Card .. 229
Powerbook 140/170 - 4 Meg. 159
Powerbook 140/170 - 6 Meg. 209
Powerbook 160/180 - 6 Meg. 229
Powerbook 160/180 - 8 Meg. 349
Powerbook 160/180 - 10 Meg. .. 449
Powerbook 210/230 - 8 Meg. 399
Powerbook 210/230 - 10 Meg. ... Call
Powerbook 210/230 - 20 Meg. ... Call
PowerBook 12-Hour Battery Pack 49

Accelerators & Cache:

Co-Processor - Mac LC 79
Co-Processor - Mac Classic II 79
IICi Cache Card 169
IIsi Cache w/FPU Socket 149
IIsi Cache w/FPU Installed 199
Classic Accel w/Co-Processor ... 199
SE Accelerator w/Co-Processor . 279
Quadra 700/900 Accelerator 299
7VSA-A Increases processor speed from 25MHz to 30MHz!
Quadra 900 Accelerator 139
7QDOD-9 Increases processor speed by 25% to 33MHz!

Ethernet/Network



Asanté MacCon3 - 64K 189
The 3-in-1 (Thick, Thin and 10BaseT) Ethernet card for most expandable Macintoshes including the IIsi and SE/30. Not available for the LC or LCII.

Asanté MacCon+ - 64K 149
Economical, 64K high-performance Ethernet for almost every model of Macintosh. Select either Thick/Thin or Thick/10BaseT. The Asanté MacCon+ models for the LC, LCII and IIsi each have a socket for a co-processor.

Asanté FriendlyNet Adapters 69
Designed to work with the new Apple Ethernet cabling system - a plug-and-play networking system which makes Ethernet as simple and easy as LocalTalk.

Asanté 10BaseT Hub/8 239
An economical way to expand your Ethernet network using unshielded twisted pair wiring (10BaseT).

Asanté 10BaseT Hub/12 479
A more sophisticated and larger version of the Asanté 8-port Hub. The most economical way to expand your Ethernet network using unshielded twisted pair (UTP, 10BaseT). Fully supports IEEE specifications.

AsantéHub 1012 1,379
A 12-port, intelligent 10BaseT hub. Built-in expansion slot for internet-working option cards (optional SNMP in-band module). Multiple hubs can be interconnected via BNC, RJ45 and AUI. Works with AsantéView software (optional) for control directly or remotely.

Asanté Print 349
An inexpensive Ethernet-to-LocalTalk converter that easily connects one or two LocalTalk peripherals to an Ethernet network. With no switches to set or installation software to load, it is smart enough to work right out of the box. Thick/Thin or Thick/10BaseT.

TechWorks Ethernet Cards 99
We made a special purchase of TechWorks Ethernet NuBus cards and are offering them on a first-come-first-served basis. Limited to supply on-hand.

Tribe LocalSwitch 1,499
LocalSwitch is a 16-port intelligent packet-switching hub for Macintosh networks. Using standard LocalTalk protocol and twisted pair wiring, LocalSwitch processes many network transmissions simultaneously.



\$1,499 Tribe LocalSwitch

Modems

SupraFAX Modem Plus 2,400 199
2,400 bps Modem/9,600 send-receive FAX. v.42bis data compression for up to 9,600 bps data.



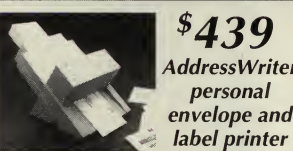
SupraFAX Modem 14,400

SupraFAX Modem v.32bis 14,400 ... 349
14,400 bps Modem/14,400 send-receive FAX. v.42bis compression for up to 57,600 bps data.
All SupraFAX modems include STB and MicroPhone software, cable and have a 5-year Warranty

Quicktel 2400/9600 FAX/Modem ... 139
2,400 bps Modem/9,600 send-receive FAX. v.42bis compression for up to 9,600 bps data. Incl. software.

Quicktel v.32bis 14,400 299
14,400 bps Modem/14,400 send-receive FAX. v.42bis compression for up to 57,600 bps data.

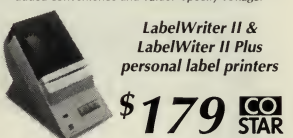
CoStar Printers



\$439

AddressWriter personal envelope and label printer

AddressWriter Printer 439
144 x 144 impact dot-matrix print head. Optional label feeder will handle a variety of pin-fed labels for added convenience and value. Specify voltage.



LabelWriter II & LabelWriter II Plus personal label printers

\$179 CO STAR

The LabelWriter II and II Plus use direct thermal input technology to produce high-quality labels in a variety of sizes. The LabelWriter can be attached directly to your computer or AppleTalk Network.

LabelWriter II Mac 179
Handles up to 350 labels per roll. Maximum label size: 1-1/8" x 3-1/2". Prints one label in 3-1/2 secs.

LabelWriter II Plus Mac 249
Handles up to 700 labels per roll. Maximum label size: 2-1/4" x 4". Prints one label in 3-1/2 to 7 secs.

300/600/800/1,200 dpi Color & Grayscale Scanners



Tamarack 600 dpi Color Scanner \$979 and Slide Attachment \$549

Tamarack 600 Color Scanner:
24-Bit Color - 8.5" x 11.5" 979
Slide Attachment (shown) 549
PhotoShop LE (limited version)* 99
PhotoShop 2.0 (full version)* 199

Relax Color: (Epson Engine)

24-Bit Color Scanner - 8.5" x 11.5" 999
300 dpi - 110 VAC 1,099
300 dpi - 220 VAC 1,099
Color Studio 1.5 (full version)* 159
Color Studio 1.5 (limited version)* 79

Umax Color Scanners:

UC630** - 8.5" x 14" 1,079
24-Bit 600 dpi w/PhotoShop ... 1,079
Transparency/Slide Attachment . 789
Auto Document Feeder 479
UC1200S** - 8.5" x 14" 2,999
24-Bit 1,200 dpi w/PhotoShop 2,999
Transparency/Slide Attachment . 889

Relisys Color Scanner:

ColdScan 800 - 8.5" x 14" 1,099
24-Bit 800 dpi 1,099
PhotoShop LE (limited version)* 99
PhotoShop 2.0 (full version)* 199
* with purchase of scanner, ** includes PhotoShop

SHARP JX-320 \$999

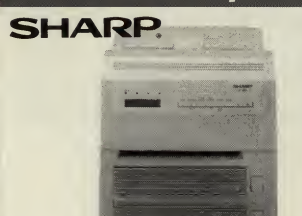
16 Million Color - 300/600 dpi

An affordable, quality, flatbed 8-1/2" x 11", 24-bit color scanner for business and professional use. Sharp's patented one-pass system ensures quality color while reducing scan times. 600 DPI using Sharp's proprietary software. By strobing three colored fluorescent bulbs through filters the Sharp system ensures optimal color accuracy and eliminates misregistration for clearer reproduction. The Sharp JX-320 is the first color scanner fully compliant with the new SCSI-2 standard which eliminates the need for special drivers.

Includes the full version of PhotoShop. OCR compatible. Built-in command set includes: downloadable Gamma Tables; Edge Emphasis; Brightness; and, Lightness. 110 VAC only.

Sharp JX-320 Color Scanner 999
Transparency Option JX-32F3 799

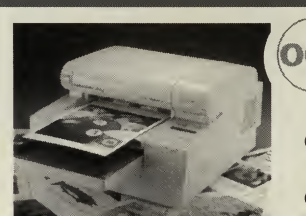
PostScript Printers



600 dpi Engine, 8 ppm, RISC Processor, AppleTalk on-board. Scalable typefaces (PostScript and PCL5) generating thousands of fonts. Printer emulations include Hewlett Packard, IBM ProPrinter & Epson. Parallel and serial interface with automatic sensing. 2 MB RAM (expandable to 8MB).

\$1,499

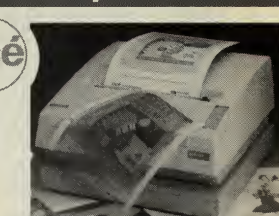
Mac & IBM Compatible



Four Color PANTONE Matching System • Network Capability

The Océ G5241 puts the power of color PostScript® printing on your desktop using a true Adobe® PostScript interpreter. Using the thermal transfer method, the G5241 prints either 3 or 4 color on letter or A3 size, paper or overhead transparencies at 300 dpi.

\$1,999



The Océ G5232 has all the great qualities of the G5241 but increases the printing capability to tabloid size pages at 300 dpi. True PostScript®, 35 Adobe fonts in ROM, downloadable fonts sup-ported. 8Mb Ram, 20Mb hard drive.

\$2,999

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REMOVABLE
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DIVA VIDEO SHOP

Plus Megs of
QuickTime Movies
FREE on Every
Cartridge !!

\$389 **\$489** **\$589**

Mobile 44 **Mobile 88** **Mobile 88+**
SQ555 **SQ5110** **SQ5110C**

Reads and writes both
44 and 88 Meg. cartridges!

Cartridge	1 to 4	5 and Up	Cartridge	1 to 4	5 and Up
44 Meg.	63	61	88 Meg.	98	95

Introducing FreeLance™

Desktop
performance
that fits in your
pocket!

Our powerful 80MB, 120MB and 160MB FreeLance drives are designed for the Apple PowerBook computers - we even use the same quality drives Apple uses! Light (less than 10 ounces) and fast (17 ms seek time). The FreeLance feature quiet and reliable Quantum GoDrives for added value. Our FreeLance Value Pack includes everything you need to work with the PowerBook including a power supply and SCSI cable for the Macintosh. The FreeLance Dock™ adds battery power and charger for convenience and extended use on-the-go.

FreeLance Drives:

80 Meg. FreeLance Go•Drive 429
120 Meg. FreeLance Go•Drive 549
160 Meg. FreeLance Go•Drive 699
includes your choice of a 110V or 220V power supply and a PowerBook or standard Macintosh SCSI cable.

Options:

PowerBook Battery - 140-180 49
SCSI Cable - DB25M/DB25M 19
SCSI Cable - DB25M/Cent50M 19
Adapter - DB25M/HDI30 19

External PowerBook Case Kits.

Compact-128mm x 75mm x 26mm
Compatible with most 2.5" hard drives-Quantum, Conner, Seagate. Low power consumption allows the drive to be powered by the Apple ADB Bus with included cable or optional AC adapter. Front panel LED operation indicator. External SCSI ID switch.

PowerBook Hard Drives Kits:

Mac 1
DB25M/Mini-Ribbon 50 Cable 89
PowerBook 1
HDI30/Mini-Ribbon 50 Cable 89
Options:
AC Adapter 39

Bernoulli Mac 90

MEGA

\$499

lomega has
enjoyed an
excellent
reputation
for years as
the provider
of high quality
removable storage for
IBM computers.

Now they have brought their years of experience to the Macintosh.
90 megabytes of storage in each data cartridge.
Includes software and cables.

5-year warranty on all
data cartridges!
Cartridges - \$169

DAT, ExaByte & Teac Tape Drives & Media

Tape Drives include media, software and cables!

Tape Drives:

160 Meg. Tape Vista - TEAC 449
250 Meg. Tape Vista - Archive 599
600 Meg. Tape Vista - TEAC 699

DAT & ExaByte Drives Include Retrospect Software!

DAT 4 mm Drives:

2.0 Gig. DAT Sierra - Archive 1,299
2.0 Gig. DAT Sierra - ExaByte DAT . 1,199
2.0 Gig. DAT - Hewlett Packard 1,399

Compression DAT 4 mm Drives:

8.0 Gig. DAT Sierra - Archive 1,399
8.0 Gig. DAT Sierra - ExaByte DAT . 1,499
8.0 Gig. DAT - Hewlett Packard 1,599

ExaByte Helical Scan 8 mm Drives:

2.2 Gig. Tape Vista - ExaByte 8200 . 1,799
5.0 Gig. Tape Vista - ExaByte 8500 . 2,799

2.0 Gig.
DAT Tape

Retrospect
software & tape
included!

\$1,199

Relax 600 Meg. Tape 699

Selected for performance, value and service. Quality at low cost. Perfect for backing up hard disks up to 600 megabytes. Complete package includes software, cables and media. MACWORLD - 12/92.

MACWORLD
MW
EDITORS' CHOICE

Premium Hard Disk Drives - Macintosh

Seagate 3-1/2" Half Height

	Internal	External
510 Meg. - ST1581N, 14 ms.	939	999
1.0 Gig. - ST11200N, 14 ms. ...	1,339	1,399

5-1/4" Full Height - WREN

	Internal	External
1.0 Gig. - ST41200N, 15 ms. ...	1,299	1,399
1.4 Gig. - ST41651N, 15 ms. ...	1,699	1,799
1.9 Gig. - ST42100N, 12.9 ms. ...	1,939	2,039

5-1/4" Full Height - ELITE Ultra-High Performance

	Internal	External
1.4 Gig. - ELITE-I, 11.5 ms.	1,999	2,099
2.1 Gig. - ELITE-II, 11 ms.	2,799	2,899
3.5 Gig. - ELITE-III, 11 ms.	3,439	3,539

Fujitsu 3-1/2" Half Height

	Internal	External
520 Meg. - 2624FA, 9 ms.	945	1005
1.2 Gig. - 2694SA, 8.5 ms.	1,695	1,755

5-1/4" Full Height

	Internal	External
1.2 Gig. - 2266SA, 11.5 ms.	1,399	1,499
2.0 Gig. - 2652SA, 11.5 ms.	2,299	2,399

Maxtor 3-1/2" Low Profile/Low Power

	Internal	External
120 Meg. - 7120S, 15 ms.	239	309
213 Meg. - 7213S, 15 ms.	349	409

5-1/4" Full Height

	Internal	External
645 Meg. - XT8760, 16.5 ms. ...	1,299	1,399
1.7 Gig. - Panther, 13 ms.	1,699	1,799

Conner 3-1/2" Half Height

	Internal	External
42 Meg. - CP-3040, 25 ms.	179	239
85 Meg. - CP-30080E, 17 ms.	199	259
120 Meg. - CP30100, 19 ms.	279	339
170 Meg. - CP-30170E, 17 ms.	299	359
212 Meg. - CP-30200, 12 ms.	379	439
545 Meg. - CP-30540, 8.5 ms.	909	969

Hewlett Packard 3-1/2" Half Height

	Internal	External
422 Meg. - HP2235, 12.6 ms. ..	1,049	1,109
1.2 Gig. - HP2247, 12.6 ms.	1,559	1,659

5-1/4" Full Height

	Internal	External
1.2 Gig. - HP97558, 13.5 ms. ...	1,665	1,765
1.6 Gig. - HP97560, 13.5 ms. ...	1,989	2,089

Quantum 3-1/2" ELS Low Profile

	Internal	External
42 Meg. - ELS42, 19 ms.	179	239
85 Meg. - ELS85, 17 ms.	219	279
127 Meg. - ELS127, 17 ms.	269	329

2-1/2" - Internal for the Mac PowerBook only

	Internal	External
80 Meg. - Go•80, 17 ms.	329	429
120 Meg. - Go•120, 17 ms.	429	529
160 Meg. - Go•160, 17 ms.	599	699

3-1/2" PDS, PRO & LPS Series

	Internal	External
240 Meg. - LPS240, 10 ms.	399	479
525 Meg. - LPS525, 10 ms.	979	1039
1.0 Gig. - PD1050S, 11 ms.	1,339	1,399
1.2 Gig. - PD1225S, 11 ms.	1,459	1,569

Quantum



High Performance and exceptional reliability are words commonly used to describe Quantum Hard Drives. The company has maintained a superb record of successes with its line of very fast 3 1/2" half-height and PowerBook Go drives. And now Quantum wants to share its achievements by offering you its proven technology hard drives, two year warranties, and at new low factory prices!

Special Purchase
Quantum 127 Meg.

ELS127, 17 ms average access.

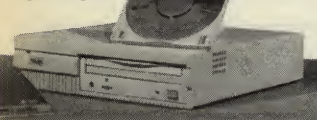
\$269

External Model \$329.

Macintosh CD-ROM Players

Kodak Multisession Compatible

\$649



Toshiba CD-ROM - XM3401B..... 649

Featuring the Multisession Toshiba XM3401B. Vista CD-ROM provides state-of-the-art performance including a sealed contamination free environment and an automatic lens cleaning mechanism which dramatically improves reliability. Fast 200 milliseconds average access. Full audio control via software is provided by the Music Box software. Includes sample CD.

Texel Multisession CD-ROM..... 549

Featuring the Texel DM3024. This is a performance drive with 235 ms average access and double the normal speed - 300 KBytes/sec. data transfer. Kodak Photo-CD compatible!

\$299

Portable Player

NEC



CD-ROM - Mesa Portable 299

New! Manufactured for Relax by NEC, the Mesa is a fast, portable and fully functional CD-ROM player for music and data. Call for details about this bargain performer.

Rewritable Optical Drives

\$1,499
600 Meg.
ISO Optical

- Industry Standard - ISO Certified
- Macintosh - IBM Compatible
- Low Cost - High Performance

Large, fast and affordable. We offer a variety of solutions for your large capacity data storage needs.

600 Meg. Optimum ISO Model 750 . 1,599
Premium Quality at Low Cost - 60 ms. access
While Supplies Last - Limited Quantity!

600 Meg. Ricoh ISO 5030E-II 1,499
Factory reconditioned. Full warranty. 67 ms. access.

600 Meg. Ricoh ISO 5031E New! ... 2,599
High performance - 35 ms. average access.

1.0 Gig. Maxoptix Tahiti-II 3,195
High capacity - 1 Gigabyte - 35 ms. average access.

600 Meg. Pioneer MultiFunction 2,199
Rewritable and WORM in one unit.

600 Meg. Pioneer WORM 1,799
Premium quality, best selling WORM

Media:

	1 to 4	5+
600M 5-1/4" Optical Plastic .	99	95
600M 5-1/4" Optical P 5-Pk	475	460
600M 5-1/4" Optical Glass .	169	159
1.0G Glass, Maxoptix	239	229
600M Multifunction	179	169
600M WORM, Pioneer	109	99

New!



128 Meg. Optical
Macintosh & IBM compatible
\$999

Each 3-1/2" erasable optical cartridge holds over 120 megabytes of data! The Sierra MO (shown) is an ideal primary or backup storage device for IBM or Macintosh personal computers. Featuring the Panasonic, RICOH or EPSON drive, the Sierra MO is IBM and SONY compatible - and it is faster! Complete package - includes SCSI cable, On Location software, and power supply.

Includes media, software & cables!
128 Meg. Ricoh ISO 1,099
128 Meg. Epson ISO 1,049
128 Meg. LMSI - Panasonic ... 999

Verbatim

Verbatim Media:

	1 to 4	5+
128 Meg. 3-1/2" Optical	44	39
128 Meg. 3-1/2" 5-Pk	195	175
600 Meg. 5-1/4" Plastic ..	109	105
600 Meg. 5-1/4" P 5-Pk ..	495	475

Case Kits

Cases are Made by Relax Inc. in the U.S.A.

Includes 35 watt power supply, fan, SCSI ID & cable.
Half Height ..3.5" or 5.25" 89
Half Height..with front cut out 89

55 Watt Universal 90-265 volt Power Supply

Includes power supply, fan, SCSI ID & cable.

Full Height..5.25" with cut out 119

Portable Case Kit for PowerBook or any Macintosh

Includes SCSI cable, SCSI ID, & ADB power cable

PowerBook model with HDI-30 cable .. 89

Standard model with Apple DB25 cable 89

Cables/Terminator

Hi-Quality Molded SCSI Cables

2' AppleDB25 to Cent.50M 9
2' Cent.50M to Cent.50M 19
6' Cent.50M to Cent.50M 29

TermiGard LED Termination Power Indicators The Best you can buy!

Standard Single Ended Cent50 9

Active Single Ended Cent50 29

Macintosh Video Cables for On-Board Video or Most Monitor Brands

Mac 15 pin to RGB 39

Quadra/Centra 16" or 21" 49

SCSI Utilities

RELAX Formatting Utility supports Hard Drives, Optical Drives, and Removables.
Mac Utilities v1.25 19

Software Architects Formatter One and Formatter Five offer partitioning, AU/X compatibility, Testing, DOS Support and much more.
Formatter One ..partitioning,AU/X 49
Formatter Five ..Dos Support 159

DK Research offers a wide variety of SCSI Software. Support includes, Hard Drives, Optical Drives, and Tape Drives.
Hard Drive ..partitioning, AU/X 39
Optical Drive ..partitioning, AU/X 59
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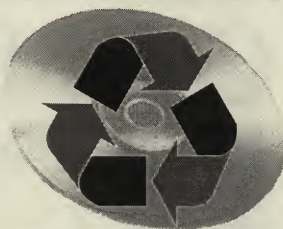
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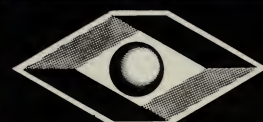
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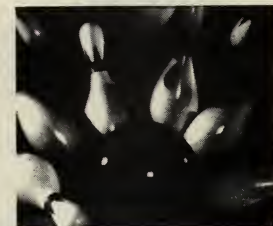
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PowerCD

From Page 1

time of 550 milliseconds and a SCSI transfer rate of 2.1 Mbytes per second. It reads discs in ISO/High Sierra and CD Digital Audio formats.

PowerCD can play single- or multisession Photo CDs on a Mac or television. Its push-button controls work with both Photo CDs and audio discs. A battery-powered remote control will let users control other Photo CD and audio CD functions. For instance, users will be able to pan, zoom and rotate Photo CD images, as well as cycle through images. Audio CD users will likewise be able to play tracks in a preselected order.

PowerCD will be the first product from Apple's Personal Interactive Electronics division, which is reportedly developing a variety of CD-ROM multimedia players that will display text, graphics and QuickTime movies on the Mac or a TV monitor.

► **Apple CD-ROM mastering.** Apple's Mass Storage Devices group is working on a CD-ROM mastering system that the company hopes to ship by early next year for about \$4,000, according to sources.

Apple reportedly is considering licensing hardware and software components from several third parties, including NEC Corp. of Tokyo and Gutenberg Systems of Andover, Mass.

Users of Apple's system will be able to create CD-ROMs by dragging files to a blank master disc mounted on the desktop.

The device will create discs in a variety of formats. According to sources, Apple is licensing software from Eastman Kodak Co. of Rochester, N.Y., that will allow the mastering system to create multisession Photo CDs. Users reportedly will be able to bring CD masters to photo shops for duplication by Kodak.

Kodak this week will introduce similar software that works with the \$5,995 Kodak PCD Writer 200 disc-mastering device. Photo CD Portfolio software will let users create Photo CD presentations complete with images, sounds and text (see story, Page 24).



FRANK PYOR

Apple's PowerCD is a three-in-one CD player that lets users play CD-ROM, Photo CD and audio CDs. The device, due this summer, is expected to cost less than \$500.

According to sources, Apple will promote the ISO 9660 CD-ROM standard as a medium for storing document-image archives accessible by clients on mixed networks.

Apple's system will join a growing number of lower-cost CD-ROM mastering devices. Pinnacle Micro in January introduced a system priced at less than \$4,000, and Philips Consumer Electronics Co. and JVC Information Products Co. both offer desktop recording systems for less than \$10,000 each. □

Printers

From Page 1

Sources said the DeskJet 1200C/PS runs on an Intel i80960SA RISC chip. It will ship with 4 Mbytes of RAM, which can be expanded to 20 Mbytes. The printer includes a 180-sheet input tray, a manual feeder for labels and envelopes, and a 100-sheet output tray.

The new model will also be available as the DeskJet 1200C, a \$1,699 PCL 5-only configuration that includes 2 Mbytes of RAM. DeskJet 1200C users will be able to upgrade to Level 2 for \$729, sources said.

HP also reportedly will cut the prices of its monochrome DeskWriter inkjet by \$80, to \$399, and color DeskWriter C by \$60, to \$559. The company will offer new drivers that provide the DeskWriter C with support for Apple's ColorSync software and add seven new Type 1 fonts to both DeskWriter models.

In addition, sources said, HP in May will introduce the DesignJet 650C, a CMYK (cyan, magenta, yellow, black) inkjet plotter that will be available in 36- and 24-inch-wide configurations for \$8,995 and \$7,495, respectively. The device prints in color at 300 dpi and monochrome at 600 dpi. It includes an 80960CA RISC chip and 4 Mbytes of RAM and can plot a color image in 18 minutes at highest quality. It will ship standard with Centronics parallel and RS-232C serial ports and will support JetDirect cards. It switches automatically among HP-GL, HP-GL/2 and HP RTL; an Adobe PostScript Level 2 upgrade kit that includes scaling for large-format output and 39 Type 1 fonts is slated for August, according to sources.

► **Apple** reportedly is working on a letter-size 24-bit-color inkjet printer, code-named Fantasia and slated to ship late this year. According to

sources, the new printer will cost less than \$700 and is intended as competition for HP's \$879 DeskWriter 550C. Like the HP model, the Apple printer uses CMYK inks, allowing it to print both black text and color graphics without swapping cartridges.

Fantasia reportedly will be based on a new Canon engine. Sources said the new device offers better color output to plain or coated paper than Apple's current CMYK inkjet, the \$2,349 tabloid-size Apple Color Printer, which also uses Canon hardware. Like the Apple Color Printer, the new model will connect to the Mac via a serial interface, and it will lack a processor. □

SkyLab

From Page 1

tion that contains two Rockets would sell for about \$20,000 to \$25,000, sources said.

Radius declined to comment.

Radius' RocketShare system software supports multitasking, allowing each Rocket to act as an independent CPU. SkyLab reportedly also enables multiprocessing but only for applications that are designed to support parallel processing. Radius will provide developers with a parallel-processing application programming interface.

SkyLab will incorporate new hardware and software networking technology that reportedly provides throughput of about 128 Mbits per second, 12 times faster than Ethernet. Called UltraNet, the network scheme was developed by Ultra Network Technologies Inc., a start-

FileWave

From Page 1

software to all users, based on their responsibilities and place in corporate structure. For example, Microsoft Word, Aldus Persuasion, AppleTalk Remote Access and a company's sales information database might form a file set for outside sales representatives.

Users can be placed in multiple groups, and each group can subscribe to multiple file sets. A vice president of marketing, for example, could be assigned to both marketing and executive groups and thus get all the file sets linked to each of those groups.

Groups and sets can be temporary and task-specific: That vice president might also belong to the "move to new offices" task force. When the project is complete, the IS manager simply deletes the group; FileWave will then automatically remove unneeded files from the user's disk, leaving in place those that have been created or modified by the user.

File sets consist of pointers to files stored in the FileWave database, so multiple sets can contain the same files without wasting space on storage of multiple copies. Likewise, when a user's file sets overlap — when several contain Microsoft Excel, for example — the FileWave Repository Agent, which monitors the server database, automatically ensures that the file is copied only once.

► **Trickle-down updates.** Once the file-management model is complete, all it takes to update users is to drop a new version of a file into the Repository Agent. Files are transferred bit by bit whenever a network connection is available and the user's Mac has been idle for a user-defined interval. If the transfer is interrupted for any reason, FileWave simply picks up where it left off at the next opportunity.

► **User Agent.** The FileWave User Agent stores files on the FileWave volume as they are received, making them visible only when the transfer is complete or at a later date predetermined by the administrator.

The User Agent can also place files in users' System folders and subfolders. In addition, it can be set to deliver detailed reports on the usage of specified files back to the administrator for use in planning software acquisition and implementing concurrent-use licenses. If the manager chooses, selected files in the FileWave volume can be copy-protected, preventing users from making unauthorized copies.

The User Agent can also send back user comments and error messages it encounters to the Repository Agent, which can relay those messages via Microsoft Mail to the system manager.

Wave Research is offering two versions of FileWave. FileWave Pro uses any Oracle Version 6.x database, including Oracle for Macintosh 2.0, to store files. A later version will link multiple servers to support larger networks.

FileWave Lite uses an integrated database but is limited to 50 users. It can't link multiple servers.

FileWave Pro retails for \$1,495 for a 50-user license. Additional user packs are \$69 or less per user. FileWave Lite retails for \$795.

Although Wave Research currently has no U.S.-based distribution, the company said it will sell FileWave directly to U.S. customers. FileWave will have a formal U.S. channel in the near future, according to Wave.

A demo version, fully functional but limited to five users, will be available free, according to the company.

Wave Research N.V. is at Koninklijke 32, B-2600 Antwerp, Belgium. Phone (32) 3-230-41-11; fax (32) 3-230-29-56. □

HP to deal new printer interface cards

The DeskJet 1200C/PS will come with a modular input/output (MIO) slot that can accommodate new HP cards offering more protocols for less cost than current interface options, sources said.

HP will release the JetDirect cards next month, along with its LaserJet 4Si MX network laser printer, sources said (see MacWEEK, Feb. 15).

JetDirect for LocalTalk will cost \$185. JetDirect cards for Ethernet

10BASE T will cost \$449; cards for Ethernet 10BASE T/ 10BASE 2 will be \$499. The Ethernet cards support a range of network operating systems, including AppleTalk/EtherTalk; Novell NetWare; Microsoft Windows for Workgroups, Windows NT and LAN Manager; and IBM LAN Server.

JetDirect for Token Ring will sell for \$699; it supports network operating systems from Novell Inc., Microsoft Corp. and IBM Corp.

up based here. Users can also add cards for Ethernet and Fiber Distributed Data Interface.

The server features mirrored backup, which is considered essential for mission-critical applications and is conspicuously absent from Apple's recently announced servers.

SkyLab has been under development for more than two years and has consumed a hefty portion of Radius' resources, sources said.

Some observers said that it will be crucial for SkyLab to ship by fall to beat the PowerPCs due out next year. However, sources said, SkyLab's flexible nature will let it accommodate PowerPC. "You'll just be able to drop in a PowerPC card and go," said one source.

David Jacobs, president of Jacobs Multimedia Consulting in San Francisco, said, "PowerPC is eventually going to happen and it will be

wonderful, but the Mac applications base is strong now, and people don't want to wait."

Publishing experts agreed that SkyLab could fill a void in the market. "This is the type of product the industry has definitely been looking for," said David Cole, publisher of the Cole Paper, a San Francisco newsletter about electronic publishing. "Speed is not something Apple has been too horribly concerned with. But in order [for SkyLab] to be a success there will have to be more parallel-processing applications."

Craig Cline, associate editor at Seybold Publications in Malibu, Calif., said: "Professional publishers and multimedia users have to deal with a hell of a lot of data [in] a video clip or image. [SkyLab] should help solve that by offering high-performance video and image processing on a Mac-type platform." □

CeBIT

From Page 1

"Since the creation of PDAs a year ago, we've seen a rush to the market," Bastiaens said. "I'm convinced that the market is waiting for a standard. Apple is working to make Newton that standard."

Siemens and Apple demonstrated a Newton that docked to a prototype Siemens NotePhone in two stages: first through a side-mount modem as large as the Newton itself

and then into a desktop phone station (see MacWEEK, March 22).

Although neither Motorola nor KME took the stage, Motorola said in a written statement that it plans to use the Newton operating system in a handheld device offering two-way wireless communications. KME did not comment on its plans, but some sources said the company may build a VCR that users will be able to program with a Newton-like controller.

Apple also announced that Cirrus Logic Inc. plans to build a Newton-compatible chip set for use by Apple and its Newton licensees; that LSI Logic Corp. is building an application-specific integrated circuit that will provide the interface between the Newton's processor, memory and user interface; and that Sharp Corp. will join VLSI Technology Inc. and GEC-Plessey Semiconductors as manufacturers of the Newton's ARM610 RISC processor.

Bastiaens said these deals were only the first of many and even hinted that Toshiba Corp. will sign up in the next few months.

The Apple PIE executive told one skeptical attendee that he'd bet his wine cellar that the first Newton will ship this summer. He said it will run for days on a single charge and store the equivalent of a filled reporter's notebook without additional RAM.

A tiny fax modem, bundled content and an interface to Apple Online Services will ship with the initial Newton, according to Bastiaens. A "mirror" application, code-named Docker, will emulate Newton's built-in applications on Macs, Windows and DOS machines and allow users to load and unload data from their PDA.

Bastiaens said that by May Apple will ship an object-oriented, easy-to-use development environment called NewtonScript to content developers. He also said that Newton beta ROMs were going to production last week. □

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To go forward, you must back up.

Amstrad jabs at Apple in 'first PDA' rollout

London-based PC clone maker Amstrad PLC made an "in your face, Apple" announcement at CeBIT '93 of what it called "the world's first PDA."

Amstrad's PenPad PDA 600, weighing just 14 ounces, will retail for about \$400 when it ships in May. The pen-based device will offer user-trainable handwriting recognition and basic gesture recognition.

PenPad runs on 3 AA batteries which can power it for up to 40 hours. It comes with 128 Kbytes of static RAM, expandable to 2 Mbytes; a PCMCIA slot; and a serial port for connecting to an IBM PC or compatible, printer or optional fax modem.

Applications include calendar, to-do list, address manager, note pad, alarm clock and calculator. The company plans to offer spreadsheet, word processor, fax and reference software on PCMCIA cards.

Unlike Apple's Newton, Amstrad's device does not offer any built-in intelligence to help users navigate and find data.

The device uses multiple eight-bit processors. Amstrad refused to comment on the chips' manufacturer.

In an obvious stab at Apple, Amstrad Chairman Alan Sugar said in a prepared statement, "Never has a product category been so hyped by major world suppliers without evidence that their equipment is actually near production."

PenPad may not be available in the United States for some time. Amstrad hasn't had U.S. distribution in five years.

—By Andrew Gore

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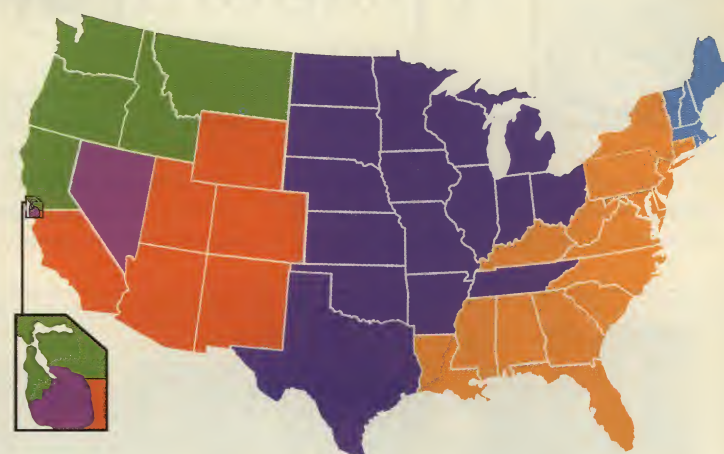
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Looking ahead



Issue date	Special section Product Watch	Close for Display ads, MarketCenter, Career Opportunities	Close for Ad Showcase
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April 19	Graphics hardware	April 8	April 6
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May 17	GW Spec. Rpt. Sound	May 6	May 4
May 24	MacWEEK 200 CD-ROM	May 13	May 11
May 31	Graphics	May 20	May 18



A platform by any other name

 At the risk of sounding like a Bud Dry commercial, the Knife points out that some questions might as well be left unasked. Why, for example, did Bill Gates choose March to leak news certain to break the hearts and dash the

hopes of millions of single women? Aren't we supposed to wait until April before witnessing the breeding of lilacs out of the dead land, mixed memory and desire, and all that?

And matters of the heart were only the beginning of the questioning. Last week's

news that Apple is experimenting with developing a version of the Mac operating system to run on Intel-based platforms may have garnered the Pentium arrival more attention in Mac corners than it would have otherwise.

But will managers and users who have

resisted the Mac in hardware form now want to switch to the Mac OS, especially when it means forsaking those spiffy Windows applications they've just shot the annual budget on? At least that's what the Knife wondered when he first started investigating this curious development. As it turns out, there are quite a few folks at Apple who are rightly asking the same questions. No doubt this is a matter that will eventually be settled by committee.

Power PCI. And now there's news of another possible Intel appearance on the Mac scene, this time in the plumbing of the upcoming PowerPC Mac. Intel's PCI (Peripheral Component Interconnect) bus standard is, as reported earlier, getting serious consideration from the PowerPC Mac development crowd. Since the PCI bus is backward compatible with the current PC bus standard, a PCI-equipped PowerPC Mac would be compatible, at least physically, with existing PC bus interface cards. Software compatibility, of course, is a horse of a different color. Why ask why, indeed.

Better performance. No one's sure why it's taken so long, but according to the Knife's sources, Apple is set to announce some changes to its consumer-channel Performa line. To the astonishment of almost no one, the LC III will be sold to the masses as the Performa 405. The announcement, scheduled for April 12, may include some other additions to the Performa lineup as well. A consumer version of the Centris 610 is a possibility, but most speculation centers on the Color Classic.

The Classic II dressed in Performa 200 clothing failed to break any sales records, and Apple initially decided against giving the Color Classic the Performa treatment. Now the Knife reports the better-than-expected Color Classic sales have caused Apple to revisit the issue. On the software side of the equation, look for more creative software bundles for the Performas.

Double trouble. You might think that Duo owners would be the most contented of all Mac users. But such is not the case, despite the fact that they've got some fairly muscular hardware in an undeniably sleek and desirable package. First they endured faulty keyboards, an enabler that only Connectix could fix, a battery life-threatening bug and probably a few other woes.

Now, after suffering through a long painful delay of several months waiting for Apple to deliver its internal Express Modem fax modem, some are discovering that it doesn't work so well even after a hasty software update. In fact, sources are saying that the staff at Apple's famous 800-SOS-APPL line are beginning to raise the subject with their superiors at their regular "emerging issues" meetings. It's really too bad that the anticipated third-party alternative is three to four months away. □

If you know what a MacWEEK mug is, you probably already know the acquisition procedure. Offering your insider info is regularly rewarded when you contact the Knife at (415) 243-3544, fax (415) 243-3650, MCI (MactheKnife), Internet (mac_the_knife@macweek.ziff.com), AppleLink (MacWEEK) or CompuServe/ZiffNet/Mac.

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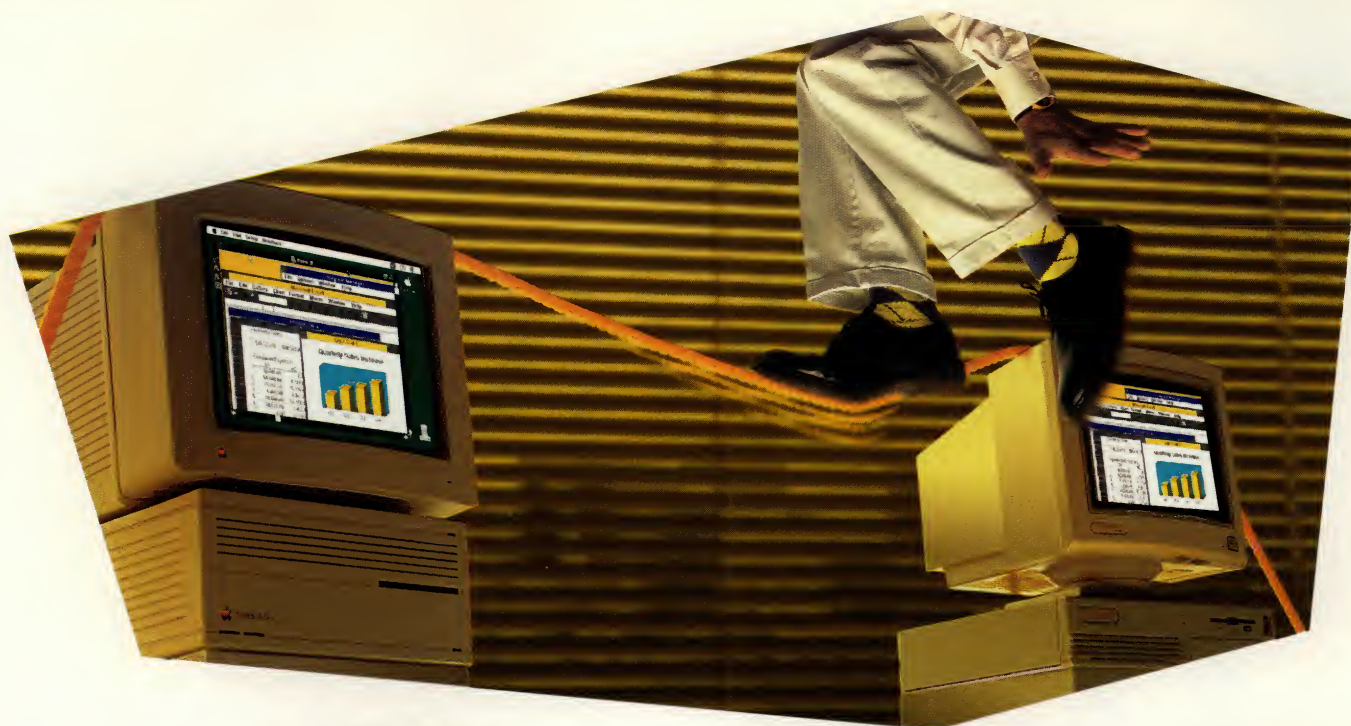
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